



Quality Management Certificate For:

Rotorua Wake & Ski Club Inc.

Order Number / Project:

Lake Tikitapu Floating Wetland

Project Location:

Lake Tikitapu – Rotorua NZ

Project Description:

1104.00 M2 of Floating Treatment Wetland



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Secugrid Q1 PP

Endurathane IN40

Endurathane Part A



Quality Policy Statement

Waterclean Technologies specialise in Biological Filtration systems that consists of manufacturing, installing and maintaining Floating Treatment Media and associated products.

The organisation is committed to setting and achieving quality standards that are capable of meeting the specified requirements and reasonable expectations of its customers.

Waterclean Technologies are customer focused and demonstrate their capability of meeting customer requirements through the implementation and maintenance of quality systems.

The quality systems encompass customer requirements, input from management and employees, documented controls for activities affecting quality, and continual quality improvement objectives.

Quality is the responsibility of every person, in every activity, throughout Waterclean Technologies Design and Service.

The Quality Policy is communicated and understood by personnel at all levels of the organisation.

Signed: _____

A handwritten signature in blue ink, consisting of a large, stylized initial 'J' followed by a series of loops and a long horizontal stroke.

Jeyd Barker – Operations Manager



Certificate of Conformance

Date: 14.08.15
Job No: Lake Tikitapu Floating Wetland
Project Size: 1104.00m2 Floating Treatment Media

Client: Rotorua Wake & Ski Club Inc.
Order No: N/A
Delivery Address: Lake Tikitapu – Rotorua - NZ

This Certificate of Conformance is to certify that Job No: Lake Tikitapu Floating Wetland has been manufactured to the Standard SWC-FTM4P as set out in the Waterclean Technologies Manufacturing Standards this can be substantiated by the attached QA Sheets.

Inspector: Jeyd Barker

Signature:

A handwritten signature in blue ink, appearing to read "Jeyd Barker", written over a light blue horizontal line.

Date: 14.08.15



Waterclean Technologies Manufacturing Standards

Waterclean Standard 3 Ply Floating Treatment Module – Serial No: SWC-FTM3P

- Minimum 3 matrix sheets cut to a minimum size of 4000mm long x 2300mm wide.
- Minimum 2 Geogrid sheets cut to a minimum size of 3800mm long x 2000mm wide.
- Minimum 10 joiner plates around the perimeter of the module.
- Duraweb strapping between the 1st & 2nd layer running between joiner plates.
- Minimum 128 shots of foam using jig.
- Minimum total count of 48 machine cycles.
- Minimum 40 plant holes, drilled with standard template, drilled through 3rd & 2nd layer of matrix, all offcuts of matrix and Geogrid to be cleared off module.
- Minimum 1 layer of coir fibre matting cut to a minimum size of 4000mm long x 2300mm wide and glued to top of module with Starstuck QDA glue with 40 plant holes punched through.

Waterclean Heavy Duty 3 Ply Floating Treatment Module – Serial No: HDWC-FTM3P

- Minimum 3 matrix sheets cut to a minimum size of 4000mm long x 2300mm wide.
- Minimum 2 Geogrid sheets cut to a minimum size of 3800mm long x 2000mm wide.
- Minimum 10 joiner plates around the perimeter of the module.
- Duraweb strapping between the 1st & 2nd layer running between joiner plates.
- Minimum 128 shots of foam using jig.
- Minimum of 750mm wide walkway with a minimum extra of 40 shots.
- Minimum total count of 55 machine cycles.
- Minimum 40 plant holes, drilled with standard template, drilled through 3rd & 2nd layer of matrix, all offcuts of matrix and Geogrid to be cleared off module.
- Minimum 1 layer of coir fibre matting cut to a minimum size of 4000mm long x 2300mm wide and glued to top of module with Starstuck QDA glue with 40 plant holes punched through.

Waterclean Standard 4 Ply Floating Treatment Module – Serial No: SWC-FTM4P

- Minimum 4 matrix sheets cut to a minimum size of 4000mm long x 2300mm wide.
- Minimum 3 Geogrid sheets cut to a minimum size of 3800mm long x 2000mm wide.
- Minimum 10 joiner plates around the perimeter of the module.
- Duraweb strapping between the 2nd & 3rd layer running between joiner plates.
- Minimum 128 shots of foam using jig.
- Minimum total count of 58 machine cycles.
- Minimum 40 plant holes, drilled with standard template, drilled through 4th, 3rd & 2nd layer of matrix, all offcuts of matrix and Geogrid to be cleared off module.
- Minimum 1 layer of coir fibre matting cut to a minimum size of 4000mm long x 2300mm wide and glued to top of module with Starstuck QDA glue with 40 plant holes punched through.



Waterclean Technologies Manufacturing Standards

Waterclean Heavy Duty 4 Ply Floating Treatment Module – Serial No: HDWC-FTM4P

- Minimum 4 matrix sheets cut to a minimum size of 4000mm long x 2300mm wide.
- Minimum 3 Geogrid sheets cut to a minimum size of 3800mm long x 2000mm wide.
- Minimum 10 joiner plates around the perimeter of the module.
- Duraweb strapping between the 2nd & 3rd layer running between joiner plates.
- Minimum 128 shots of foam using jig.
- Minimum of 750mm wide walkway with a minimum extra of 50 shots.
- Minimum total count of 65 machine cycles.
- Minimum 40 plant holes, drilled with heavy duty template, drilled through 4th, 3rd & 2nd layer of matrix, all offcuts of matrix and Geogrid to be cleared off module.
- Minimum 1 layer of coir fibre matting cut to a minimum size of 4000mm long x 2300mm wide and glued to top of module with Starstuck QDA glue with 40 plant holes punched through.



Manufacturing Job Sheet

Job No: Lake Tikitapu Floating Wetland

Order Date: 10th June 2015

Customer: Rotorua Wake & Ski Club Inc.

Despatch Date: 14th & 18th August 2015

Contact: Ian Barker

Due Date: 4th September 2015

Customer Order Number: N/A

Customer Reference: Lake Tikitapu Floating Wetland

Summary Job Details:

- 20 Floating Treatment Modules at 24m long.
- All 20 Floating Treatment Modules to be wrapped in heavy duty fishing net.

Manufacturing Standard:


- Waterclean Standard 4 Ply Floating Treatment Module – Serial No: SWC-FTM4P (same standard but these will be 5 layers thick)

Special Requirements:

- All 20 Floating Treatment Modules to have 5 layers of matrix.
- All 20 Floating Treatment Modules to have a minimum of 420 cycles.

Batch No: Lake Tikitapu

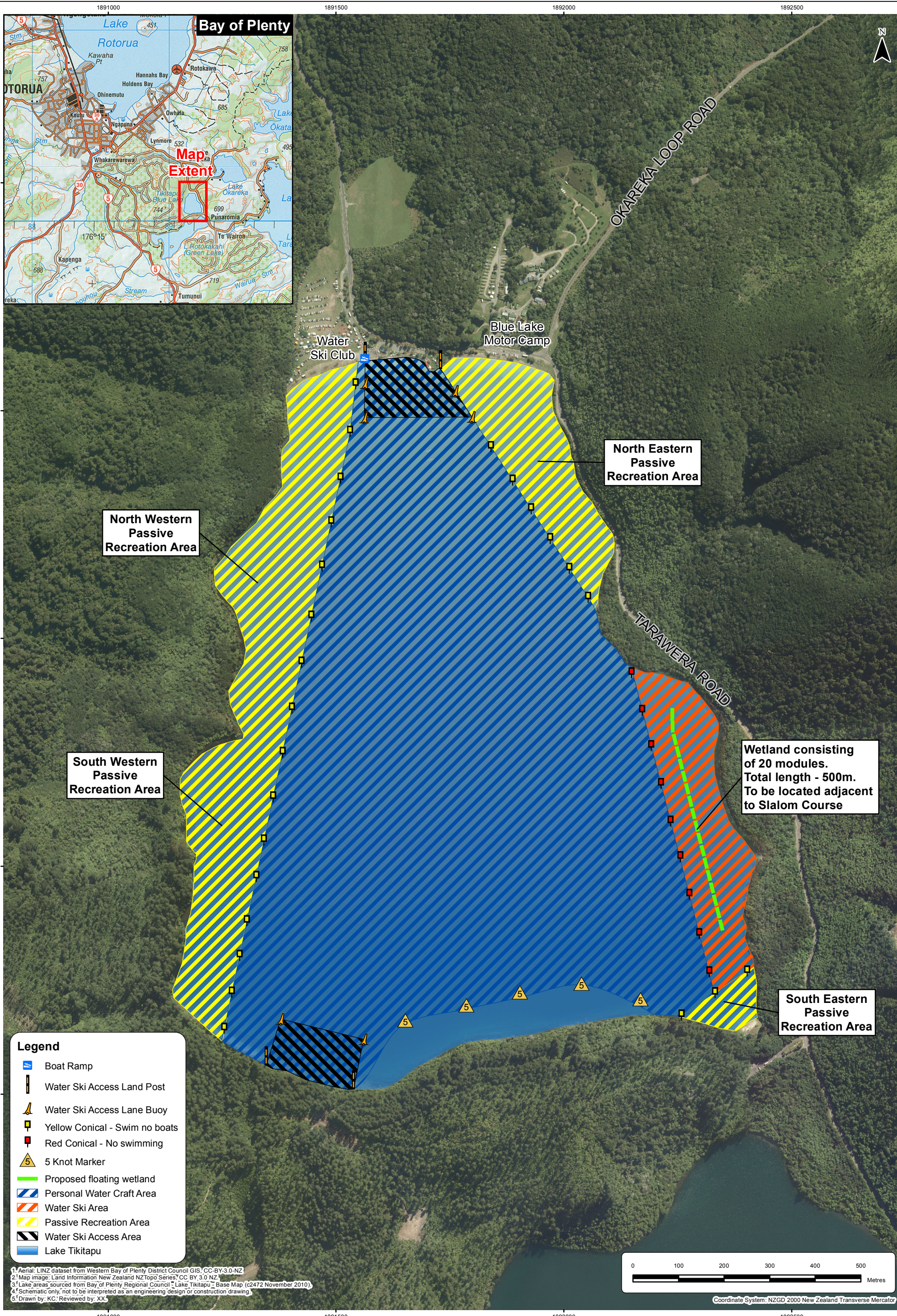
Module No's: 1 - 20

Prepared By.....

Sign & Date

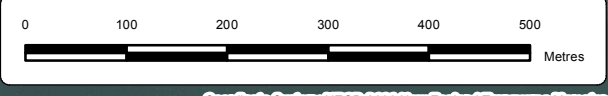
Reviewed By.....

Sign & Date



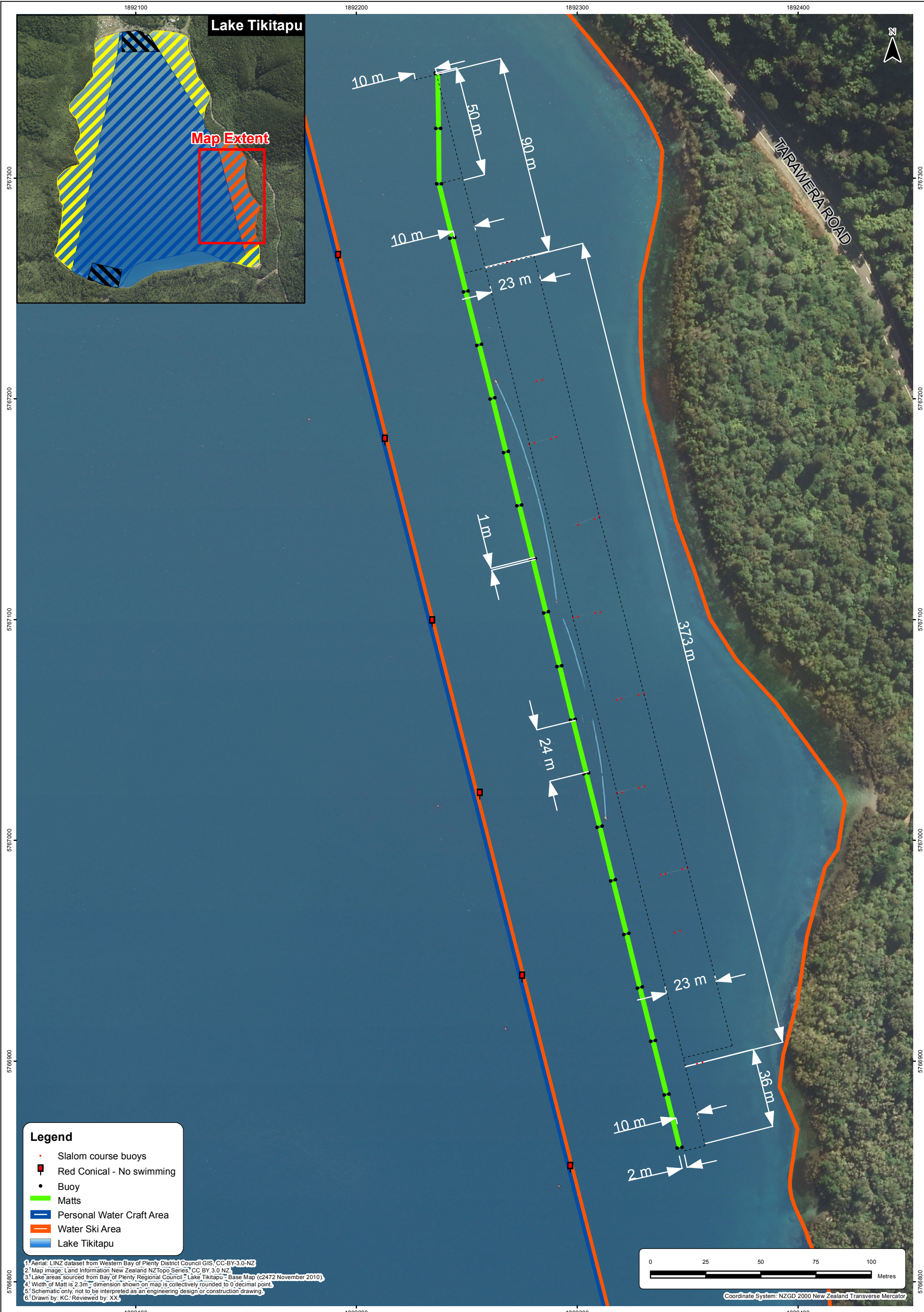
- Legend**
- Boat Ramp
 - Water Ski Access Land Post
 - Water Ski Access Lane Buoy
 - Yellow Conical - Swim no boats
 - Red Conical - No swimming
 - 5 Knot Marker
 - Proposed floating wetland
 - Personal Water Craft Area
 - Water Ski Area
 - Passive Recreation Area
 - Water Ski Access Area
 - Lake Tikitapu

1. Aerial: LINZ dataset from Western Bay of Plenty District Council GIS, CC-BY-3.0-NZ.
 2. Map image: Land Information New Zealand NZTopo Series, CC BY 3.0 NZ.
 3. Lake areas sourced from Bay of Plenty Regional Council "Lake Tikitapu" Base Map (c2472 November 2010).
 4. Schematic only, not to be interpreted as an engineering design or construction drawing.
 5. Drawn by: KC; Reviewed by: XX



Coordinate System: NZGD 2000 New Zealand Transverse Mercator

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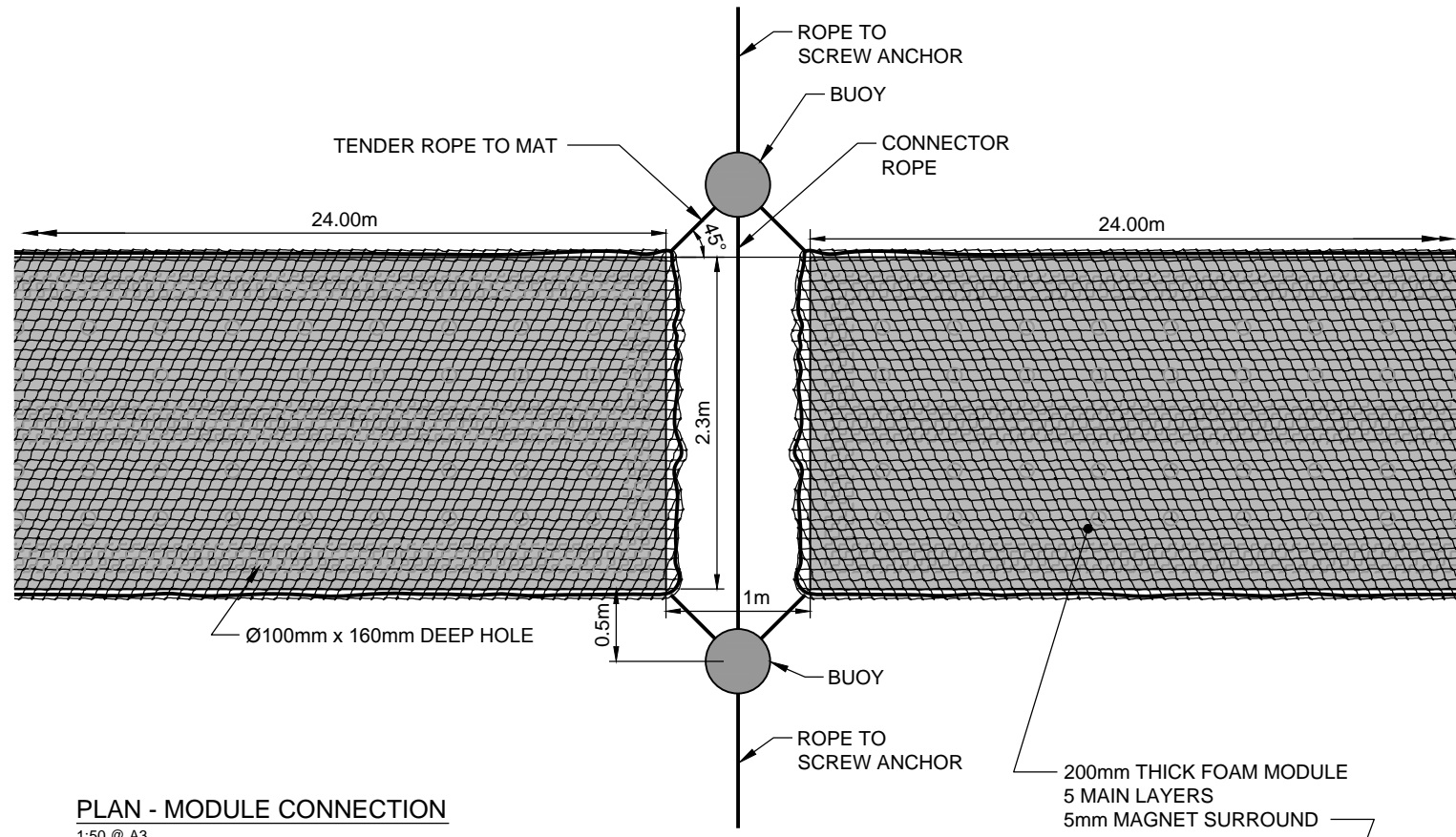
1. Aerial LINZ dataset from Western Bay of Plenty District Council GIS, CC-BY-3.0-NZ
 2. Map image: Land Information New Zealand NZ Topo Series, CC BY 3.0 NZ
 3. Lake areas sourced from Bay of Plenty Regional Council "Lake Tikitapu" Base Map (c2472 November 2010).
 4. Width of Matt is 2.3m - dimension shown on map is collectively rounded to 0 decimal point.
 5. Schematic only, not to be interpreted as an engineering design or construction drawing.
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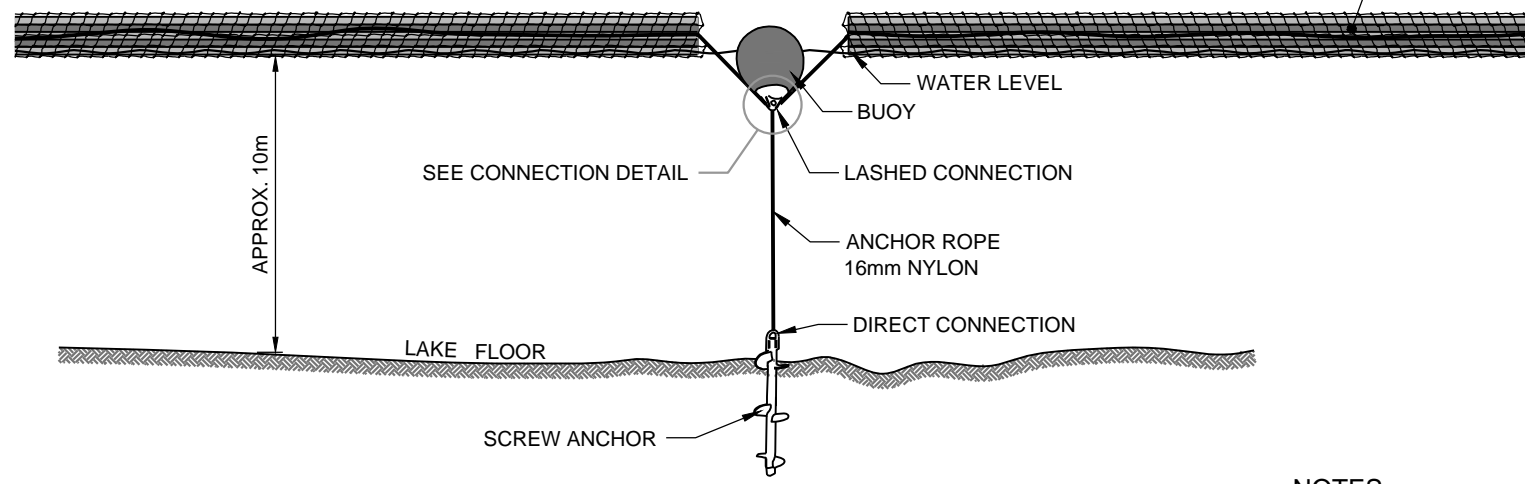
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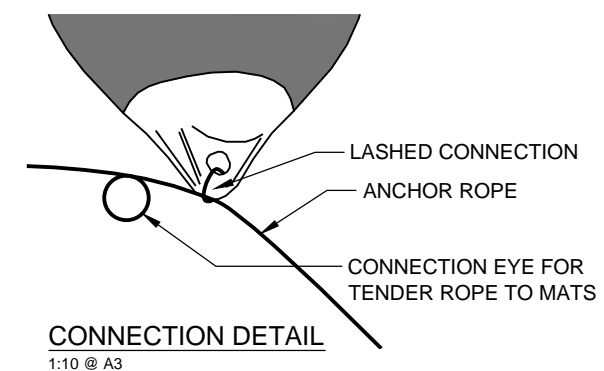
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PLAN - MODULE CONNECTION
1:50 @ A3



SECTION - MODULE CONNECTION
1:50 @ A3



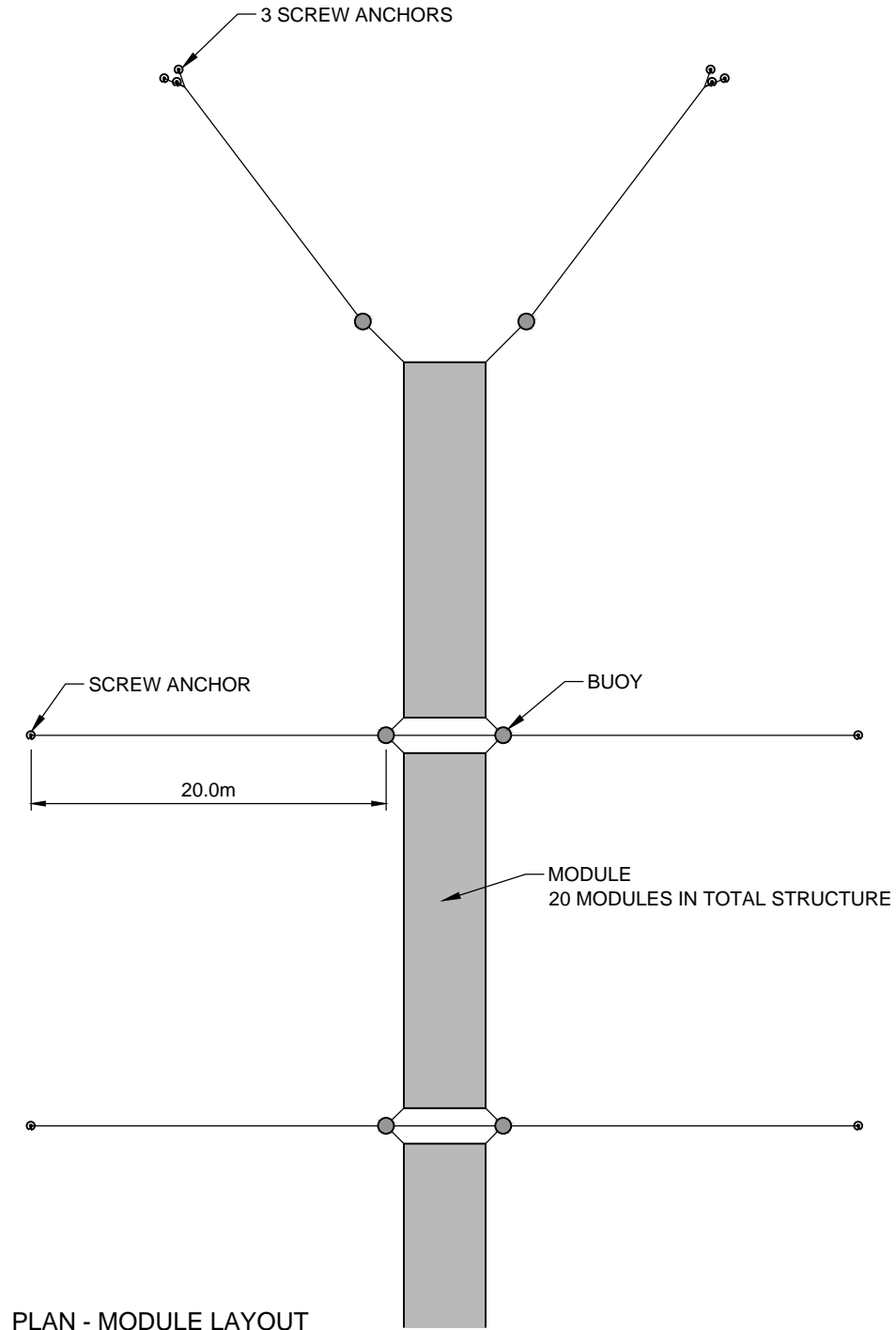
CONNECTION DETAIL
1:10 @ A3

NOTES:

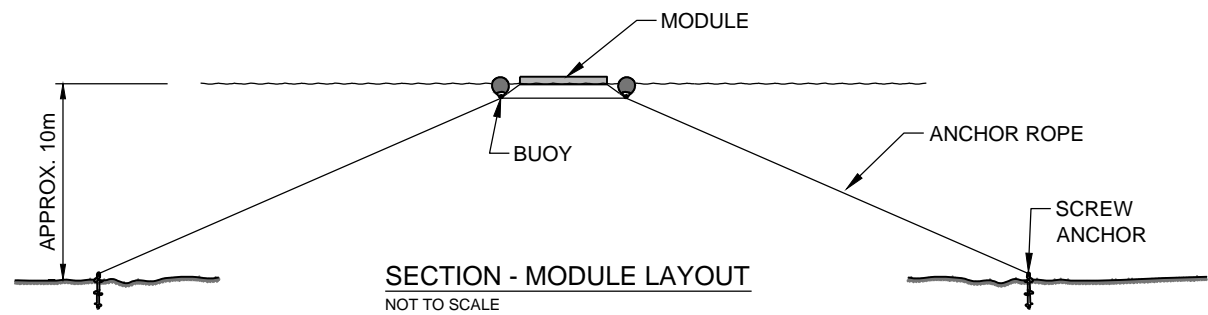
1. Screw anchor supplied and installed by Fielder Marine. Individual design holding power approximately 1,300kg
2. Anchor rope 16mm dia. nylon rope breaking strain >5,000kg
3. Buoys 55l flotation HD PPE sub-sea floats
4. All connections tied, lashed or shackled as required
5. Overall structure tensioned to minimize movement

	CLIENT Waterclean Technologies		PROJECT LAKE TIKITAPU FLOATING WETLAND						
	DRAWN BY TRA	DATE JUNE 2015	DRAWING TITLE MODULE ASSEMBLY						
	CHECKED BY IL	DATE JUNE 2015							
	SCALE AS SHOWN AT A3	SHEET SIZE A3	PROJECT No 0978210861	DOC No -	DOC TYPE -	FIGURE No F001	REVISION 1	-	

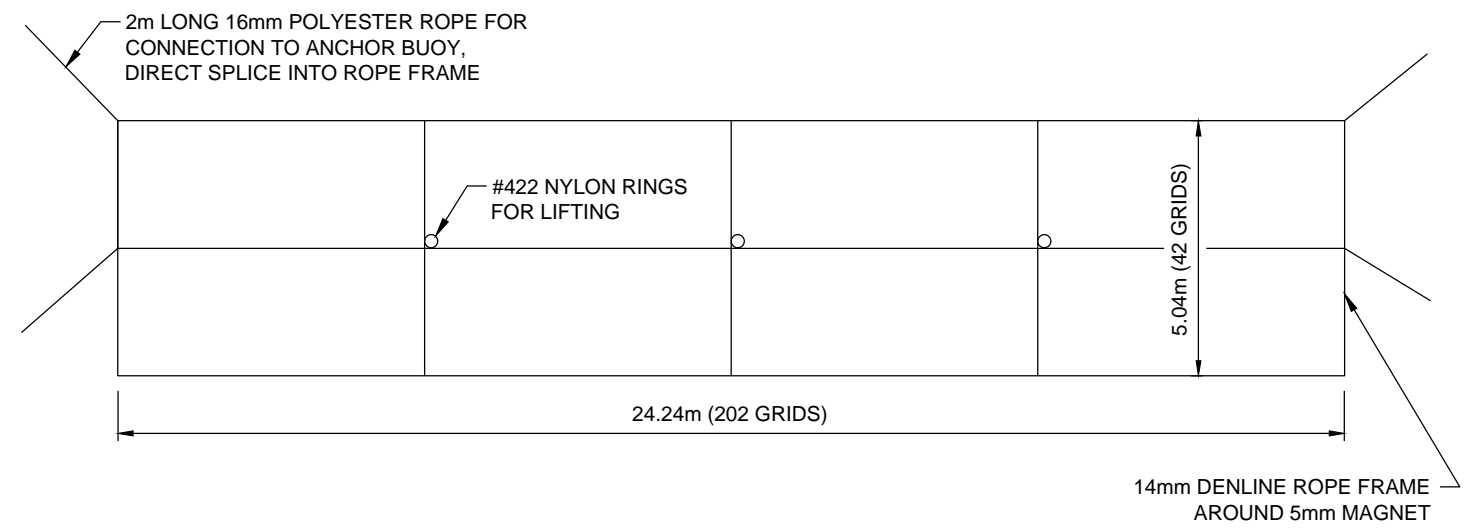
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PLAN - MODULE LAYOUT
NOT TO SCALE



SECTION - MODULE LAYOUT
NOT TO SCALE



NET CAGE DETAIL
NOT TO SCALE

NET STRUCTURE TO ENCASE FOAM MATS AND TO BE LASHED TOGETHER

NOTES:

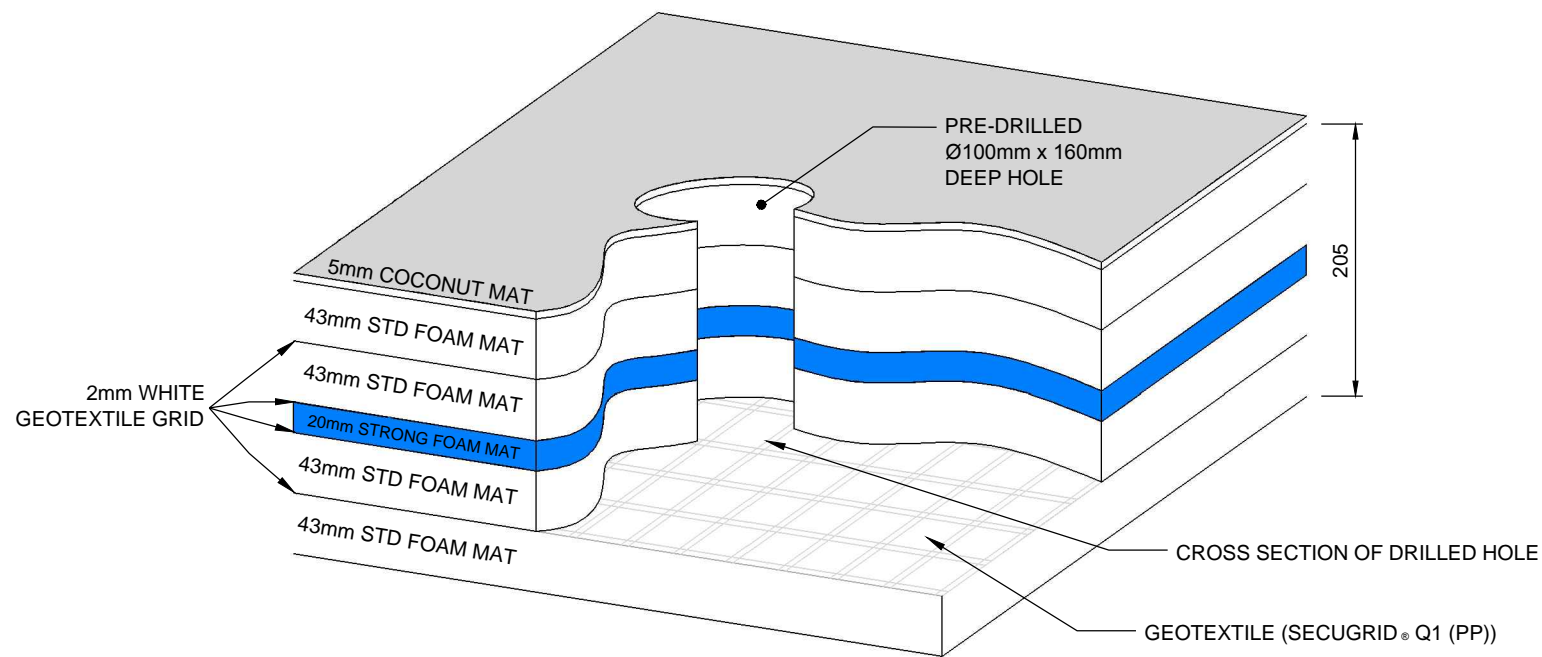
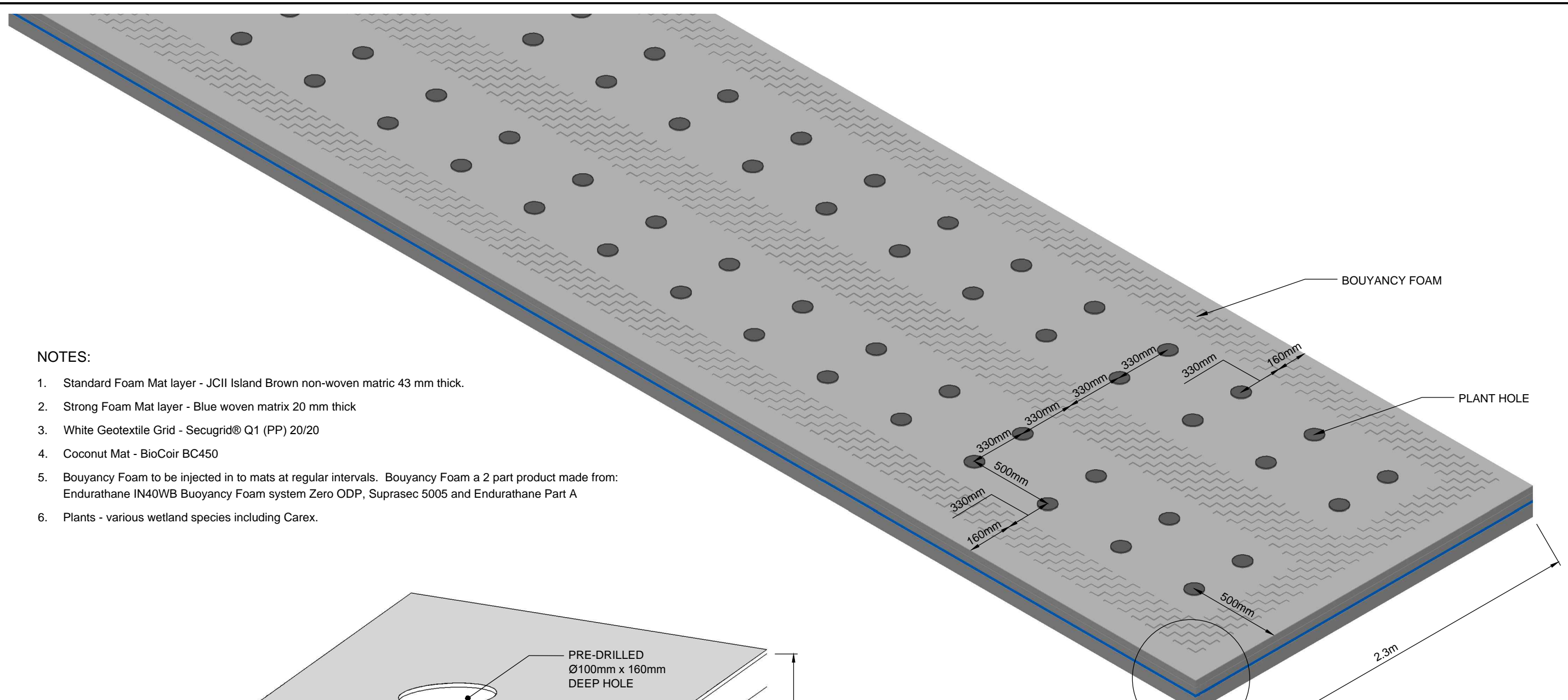
1. Screw anchor supplied and installed by Fielder Marine. Individual design holding power approximately 1,300kg
2. Anchor rope 16mm dia. nylon rope breaking strain >5,000kg
3. Buoys 55l flotation HD PPE sub-sea floats
4. All connections tied, lashed or shackled as required
5. Overall structure tensioned to minimize movement
6. Total structure to consist of 20 mat modules
7. Two northern mat modules to be angled in at 12° from the rest of the floating wetland

	CLIENT Waterclean Technologies		PROJECT LAKE TIKITAPU FLOATING WETLAND						
	DRAWN BY TRA	DATE JUNE 2015	DRAWING TITLE						
	CHECKED BY IL	DATE JUNE 2015	MODULE LAYOUT						
SCALE AS SHOWN AT A3	SHEET SIZE A3	PROJECT No 0978210861	DOC No -	DOC TYPE -	FIGURE No F002	REVISION 1			

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NOTES:

1. Standard Foam Mat layer - JCII Island Brown non-woven matric 43 mm thick.
2. Strong Foam Mat layer - Blue woven matrix 20 mm thick
3. White Geotextile Grid - Secugrid® Q1 (PP) 20/20
4. Coconut Mat - BioCoir BC450
5. Bouyancy Foam to be injected in to mats at regular intervals. Bouyancy Foam a 2 part product made from: Endurathane IN40WB Buoyancy Foam system Zero ODP, Suprasec 5005 and Endurathane Part A
6. Plants - various wetland species including Carex.



ISOMETRIC
1:25

SEE DETAIL A

DETAIL A
1:5

	CLIENT Waterclean Technologies		PROJECT LAKE TIKITAPU FLOATING WETLAND						
	DRAWN BY TRA	DATE MAY 2015	DRAWING TITLE						
	CHECKED BY IL	DATE MAY 2015	PLANT HOLES ISOMETRIC & DETAIL						
	SCALE AS SHOWN @ A3	SHEET SIZE A3	PROJECT No 0978210861	DOC No -	DOC TYPE -	FIGURE No F003	REVISION 0	-	

PRODUCTION – MODULE CUT OUT QA SHEET

Job No: Lake Tikitapu – Ski Lake Floating Wetland

MODULE NO	MINIMUM CUT SIZE 2300MM x 2400MM	SIGNATURE	DATE
1	YES	<i>[Signature]</i>	20.07.15
2	YES	<i>[Signature]</i>	↓
3	YES	<i>[Signature]</i>	
4	YES	<i>[Signature]</i>	
5	YES	<i>[Signature]</i>	
6	YES	<i>[Signature]</i>	
7	YES	<i>[Signature]</i>	
8	YES	<i>[Signature]</i>	28.07.15
9	YES	<i>[Signature]</i>	28.07.15
10	YES	<i>[Signature]</i>	29.07.15
11	YES	<i>[Signature]</i>	29.07.15
12	YES	<i>[Signature]</i>	30.07.15
13	YES	<i>[Signature]</i>	30.07.15
14	YES	<i>[Signature]</i>	30.07.15
15	YES	<i>[Signature]</i>	31.07.15
16	YES	<i>[Signature]</i>	03.08.15
17	YES	<i>[Signature]</i>	03.08.15
18	YES	<i>[Signature]</i>	04.08.15
19	YES	<i>[Signature]</i>	04.08.15
20	YES	<i>[Signature]</i>	04.08.15

PRODUCTION – MODULE SET-UP QA SHEET

Job No: Lake Tikitapu – Ski Course Floating Wetland

MODULE NO	MODULE SET-UP TO STANDARD	SIGNATURE	DATE
1	Yes	<i>[Signature]</i>	22.07.15
2	Yes	<i>[Signature]</i>	"
3	Yes	<i>[Signature]</i>	"
4	Yes	<i>[Signature]</i>	"
5	Yes	<i>[Signature]</i>	"
6	Yes	<i>[Signature]</i>	"
7	Yes	<i>[Signature]</i>	28.07.15
8	Yes	<i>[Signature]</i>	28.07.15
9	Yes	<i>[Signature]</i>	28.07.15
10	Yes	<i>[Signature]</i>	29.07.15
11	Yes	<i>[Signature]</i>	29.07.15
12	Yes	<i>[Signature]</i>	30.07.15
13	Yes	<i>[Signature]</i>	30.07.15
14	Yes	<i>[Signature]</i>	30.07.15
15	Yes	<i>[Signature]</i>	31.07.15
16	Yes	<i>[Signature]</i>	31.07.15
17	Yes	<i>[Signature]</i>	03.07.15
18	Yes	<i>[Signature]</i>	04.07.15
19	Yes	<i>[Signature]</i>	04.08.15
20	Yes	<i>[Signature]</i>	04.08.15

JCII Island Brown Nonwoven Matrix

PRODUCT SPECIFICATIONS



Note: Due to the intrinsic properties of the material and variable conditions of use, there may be slight variations in the specifications and results. Please contact America with any questions or concerns.

1.0 Description

The JCII Island Brown nonwoven material (matrix) is constructed of polyester fibers in a textured nonwoven fabrication.

2.0 Properties

Property	Value
Thickness - mm (a)	43
Weight - oz./yd. ² (a)	43
Tensile-lb./in. (min.)	20
Tear-lb./in. (min.)	20
Fiber Type	100 % Recycled Polyester
Binder System	Cross Linkable Water Based Latex
Binder Application	Spray/ Thermal bond
Color	Brown
Surface Area sq. ft./ cubic ft. of matrix	125
Volumetric Displacement (ml/cubic ft.) (c)	1015
% of Open Space Volume	96.4
Toxicity Testing	Passed
Primary Usage	Floating Islands
Packaging (b)	Rolls

(a) + or - 10%

(b) Other special packaging available with cost considerations.

(c) Volumetric displacement is a method of measurement that involves immersing a specified volume of matrix under water and measuring the amount of water displaced into a graduated reservoir from an overflow tube. This method gives an accurate representation of surface area in a matrix by taking into account the expanded surface area of the fiber from binder and binder globules at fiber crossover points.

3.0 Use

This material (matrix) is a proprietary, custom OEM product developed for use by Floating Island International and its licensee holders as a component of, including but not limited to, BioHaven® floating islands and floating treatment wetlands.

4.0 Construction

100% of the polyester fiber in the JCII Island Brown nonwoven material (matrix) comes from post consumer and industrial recycled waste. The primary source of this material is recycled water and soda bottles. We use only water based latex resins in our manufacturing process. No phenol-formaldehyde resins are used in our binding process.

5.0 “Green” Initiative

- Polyester fiber used in our material comes from 100% post consumer and industrial recycled waste product.
- Water Based Latex Resins are used in the manufacturing process. No phenol-formaldehyde resins are used in our binding process.
- Plant is operating under EPA approved Clean Air Permit.

6.0 Product Care

To prolong the life of the JCII Island Brown material (matrix), it is recommended that the product be stored indoors or wrapped in UV resistant packaging if stored outdoors. Product should be completely dry prior to any chemical alterations of this product for conversion.

7.0 Sizes

Roll Size (width)	Standard Roll Length
90 inch	30 linear yards

Additional sizes available.

Secugrid® Q1 (PP)

Advanced GeoSynthetic Solutions™

Geogrid

Technical Data Sheet: TDS G 001 042

Issue Number: 02

Date: May 2014

Page 1 of 1

Product Description: Laid Geogrid made of stretched, monolithic polypropylene (PP) flat bars with welded junctions used for the reinforcement in many fields of civil engineering, road construction, and hydraulic engineering.

PROPERTY	TEST METHOD	UNITS	20/20	30/30	40/40
			MD/TD	MD/TD	MD/TD
Raw Material			Polypropylene (PP) White		
Mass per Unit Area	EN ISO 9864	g/m ²	155	200	240
Max. Tensile Strength	EN ISO 10319	kN/m	≥20/≥20	≥30/≥30	≥40/≥40
Elongation at nominal Strength	EN ISO 10319	%	≤8/≤8	≤8/≤8	≤8/≤8
Tensile Strength at 2% Elongation	EN ISO 10319	kN/m	8/8	12/12	16/16
Tensile Strength at 5% Elongation	EN ISO 10319	kN/m	16/16	24/24	32/32
Aperture Size		Mm	33/33	32/32	31/31
UV – Resistance	EN 12224	%	95.0		
Weather Resistance	FGSV	class	high		
Production Specific Elongation		%	0		
Roll Dimensions		m	4.75 x 100	4.75 x 100	4.75 x 100

The listed technical values are guiding values, achieved in our laboratories and/or independent testing institutes. Our products are subject to changes without prior notice.

DISCLAIMER: All information provided in this publication is correct to the best knowledge of the company and is given out in good faith. The information presented herein is intended only as a general guide to the use of such products and no liability is accepted by Cirtex Industries Ltd for any loss or damage however arising, which results either directly or indirectly from the use of such information. Cirtex Industries Ltd has a policy of continuous development so information and product specifications may change without notice.

ENDURATHANE IN40WB

Buoyancy Foam System

ZERO ODP

PRODUCT DESCRIPTION

Endurathane IN40WB is a two component, low density, rigid polyurethane injection foam system utilising the latest ZERO ODP / water blowing agent technology.

Endurathane IN40WB has been especially formulated to provide good mechanical strength and dimensional stability.

Rapid reactivity and positive cure are features of **Endurathane IN40WB** which contribute to rapid processing and high productivity. These properties are coupled with good mechanical strength, high closed cell content and ease of handling.

Typical properties as seen in laboratory samples:

a) Components

Reactivity:

Cream Time (20 °C)	3 secs
Rise Time	20 secs
Tack Free	30 secs

b) Cured Material

Density, applied 40 kg/m³
[Note: see "Application Data"]

Density, free rise core 36 kg/m³

Thermal Conductivity 0.035 – 0.038 W/m °C
@ 22.5 °C

Compressive Strength 250 kPa
Closed Cells 90-95%

RECOMMENDED USES:

Endurathane IN40WB has been developed for buoyancy applications requiring small, multiple injection shots.

In some applications a higher density version may be necessary. Please consult your Polymer Group representative for a recommendation if in doubt.

ENVIRONMENTAL PROFILE

Ozone Depletion Rating:	0
Volatile Organic Content: (Environmental Protection Agency USA)	0
Global Warming Potential: (GWP 100 yr)	0

THEORETICAL YIELD

Density	40 kg/m ³
Wt/m ² @ 50mm thick	2.0 kg

COMPONENT MIX RATIO

135 : 100 by volume (maintain regular machine calibration checks and foam quality QC procedures).
Alternatively 156A: 100B by weight



PACKAGING

Nett 250 kg per drum component A.
Nett 220 kg per drum component B.

STORAGE

Store at temperatures between 15° and 26°C in tightly closed containers to prevent moisture and other contamination. If exposed to moisture Component A will crystallise resulting in line blockages and Component B will result in lower density and reduced buoyancy properties.

Shelf Life: Minimum 6 months.



HEALTH AND SAFETY ADVICE

Refer to Polymer Group Safety Data Sheets for individual products.



APPLICATION DATA

Endurathane IN40WB should be machine-applied through 2-component polyurethane application equipment such as **Graco Reactor & Fusion or Probler P2** or similar.

Please consult your representative or our Contracts Manager for advice regarding any equipment application questions you may have.

Equipment: **Graco Reactor & Fusion or Probler P2**

Static line pressures – minimum 1500 psi

Pre-heat: Part A [isocyanate] 35-40°C

Part B [polyol] 35-40°C

Hose Temperature: 40-45°C

Optimum temperatures will vary with equipment, substrate temperature and ambient conditions generally.

Check and maintain correct output ratio to $\pm 2\%$.

Ensure metering is accurate by regular ratio checks and monitoring of line pressures to gun. Operator must have adequate product knowledge to recognise faulty foam so remedial action can be taken.

Maintain equipment – isocyanate component will react with moisture and solidify. Ensure iso pump shaft is clean and lubricated to prevent crystallisation. Replenish lubricant as required. Do not leave isocyanate in line for long periods or crystallisation will occur.

Substrates:

Endurathane IN40WB may be applied to most surfaces. Substrates must be clean and dry.

Ambient and surface temperatures should be above 15°C. **Low temperatures will decrease yield markedly.**

Theoretical Coverage

Always check yield and application rates at start of job and then regularly to ensure product usage is as expected. Pay special attention when applying on to a profiled substrate to determine the “flat” area. This can often be as much as 25% greater than the measured area. Similarly adequate allowance must be made for over-packing, especially when cavities are narrow or foam has a long flow path.

1kg of foam occupies 0.025 cu.m [0.5 sq.m @ 50mm] applied under ideal conditions [1sq.m = 2.0kg @ 50mm].



STORAGE AND HANDLING PRECAUTIONS

ALL CHEMICALS MUST BE USED BY TRAINED PERSONNEL.

Component A [isocyanate] contains methylenebisphenyldiisocyanate [MDI]. It is moderately toxic. **Avoid contact with skin or eyes, avoid breathing vapour** and use only in well ventilated areas.

Component B [polyol] is a mild irritant. Always wear eye protection and suitable protective clothing.

Always wear **eye protection** and suitable **protective clothing**.

Flush splashes to the skin or eyes with copious quantities of water.

Clean up:

Owing to the chemical resistance of polyurethane products it is important to clean up any overspray as quickly as possible. Methyl Proxitol is suitable for general cleaning and Methylene Chloride can be used as a line flush.

Wear suitable protective clothing, goggles and gloves at all times when cleaning.

Greasing components beforehand assists with contamination removal.

Nov 2013

Replaces Dec 09 Rev. 2

POLYMER GROUP LTD

PO Box 204 106 Highbrook, Auckland 2161, New Zealand

Telephone: 64-9-274 1400 Fax: 64-9-274 1405

Email: sales@polymer.co.nz www.polymer.co.nz

Product Data Sheet

SUPRASEC 5005 & Endurathane Part A

PRODUCT DESCRIPTION

Suprasec 5005, also sold as **Endurathane Part A** are di-isocyanate diphenylmethane (MDI) material containing some higher functionality isocyanate. It was developed principally for use in production of rigid polyurethane foam. Systems incorporating **Suprasec 5005** and **Endurathane Part A** isocyanate can be processed by any of the conventional production methods using most polyurethane foam dispensing equipment.

Suprasec 5005 and **Endurathane Part A** isocyanate is also recommended for some polyurethane structural foam systems as well as microcellular and integral-skin flexible polyurethane foam formulations for use in applications such as automotive bumpers and internal safety trim.

TYPICAL PROPERTIES

Appearance	Dark coloured liquid
Specific gravity at 25°C	1.23
Viscosity at 25°C mPa s	220
Isocyanate (NCO) value ^(a) % by wt NCO groups (group wt = 42)	30.8
Isocyanate strength: (corrected for hydrolysable chlorine, % by wt (as MDI mol.wt 250.2)	91.8
Hydrolysable chlorine ^(b) % by wt, as Cl	0.20
Flashpoint ^(b) °C	230
Fire point ^(c) °C	245

^(a) corrected for hydrolysable chlorine

^(b) measure by hydrolysis with di-n-butylamine

^(c) measured by Cleveland Cup by ASTM D92



PACKAGING

Nett 250 kg per 200 litre drum.

MATERIAL PROTECTION SYSTEM

Suprasec 5005 and **Endurathane Part A** isocyanate are reactive with moisture and a nitrogen gas purge or desiccant dryer system should be used to prevent moisture vapour entering the containers during use.

It cannot be emphasised too strongly that water must be excluded rigorously from contact with **Suprasec 5005** and **Endurathane Part A** isocyanate.



STORAGE AND HANDLING PRECAUTIONS

Suprasec 5005 and Endurathane Part A isocyanate MUST ONLY BE USED BY TRAINED PERSONNEL.

Containers of **Suprasec 5005** and **Endurathane Part A** isocyanate should be kept properly closed and stored indoors in a well-ventilated area under normal factory conditions.

Storage at room temperature (20-25°C) provides a convenient viscosity for handling. Storage at low temperatures (below 0°C) is not recommended because it may lead to some crystallisation. This material must therefore be protected from frost.

Storage at temperatures above about 50°C is not recommended since this can accelerate the formation of insoluble solids and it also increases the rate of viscosity increase on extended storage.

Under the recommended storage conditions, and in properly sealed containers, ie drums, cans, etc, but not bulk storage vessels; **Suprasec 5005** and **Endurathane Part A** isocyanate has a storage life of at least 9 months at the customer.

The precautions necessary when handling **Suprasec 5005** and **Endurathane Part A** isocyanate ie MDI, and the decontamination procedures recommended to be used in case of spillage are described fully in the publication PU 193-1E "MDI-based Compositions: Hazards and Safe-Handling Procedures".

Every care is taken to exclude moisture from drums of **Suprasec 5005** and **Endurathane Part A** isocyanate at the packing stage, but there remains the possibility of entry of moisture resulting from accidental damage to the drum during storage or transport.

If drum ends are convex, this may indicate increased internal pressure and the product in such drums should not be heated. Damaged or pressurised drums should be dealt with as described in the publication PU 193-1E "MDI based Compositions: Hazards and Safe-Handling Procedures. If in doubt contact your Polymer Group Ltd Technical Representative.



HEALTH AND SAFETY ADVICE

The appropriate health and safety advice can be found in the material safety data sheet for **Suprasec 5005** and **Endurathane Part A** isocyanate. All users of this product are advised to read the publication PU193-1E "MDI-Based Compositions: Hazards and Safe-Handling Procedures.

Suprasec 5005 and **Endurathane Part A** isocyanate are classified as **hazardous** according to criteria in the Hazardous Substances (Minimum Degrees of Hazard) Regulations 2001. **Avoid contact with skin or eyes and avoid breathing vapour.**

General Safety Precautions

Refer to individual product Material Safety Data Sheets. Ensure that the Time Weighted Average Threshold Limit Value and the Short Term Exposure Limit Threshold Limit Value are kept below the maximum level stated on the **Suprasec 5005** and **Endurathane Part A** isocyanate material safety data sheet.

Wear an organic vapour respirator combined with adequate ventilation and full personal protective clothing. Ensure any extraction is flame proof.

When spraying in open spaces, use an organic vapour respirator and full personal protective clothing. Limit access. When spraying in confined spaces, use self-contained breathing apparatus and full personal protective clothing. Note that the use of self-contained breathing apparatus is an OSH notifiable practice.

Additional precautions:

- Close off the work area from adjacent rooms and ventilation ducts.
- Keep any personnel who suffer from asthma or asthma like symptoms or who suffer from breathing difficulties away from the process.
- Restrict the access of non-application personnel.
- No welding, smoking or open flames.

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