



CSIRO

BUILDING PRODUCTS & SYSTEMS

# Appraisals

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## TECHNICAL ASSESSMENT 336

March 2006<sup>1, 2</sup>

## SPIRALWORKS

1. August 2007. Applicant changed due to transfer of ownership.

2. December 2007. Update to data sheets for stair construction.

### PURPOSE

A spiral stair system

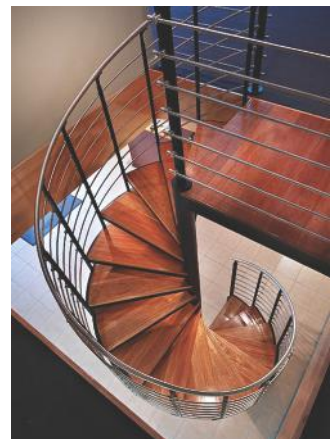
### APPLICANT

Spiralworks Pty Ltd (ABN 83 169 299 129),  
54 Frankston Gardens Drive, Carrum Downs VIC 3201  
(Manufacturer)



**Steel spiral stair system provides safe access & assures long term value.**

- range of 4 diameters
- modular construction
- extensive range of colours
- powder coated finish
- space saving
- easy to install
- structurally independent between floors
- custom made
- indoors or outdoors
- galvanised
- clockwise or anti-clockwise
- non-slip treads
- stair kit with everything you need
- installation brochure



## TECHNICAL OPINION

In the opinion of CSIRO Appraisals, the Spiralworks stair system is suitable for use as enclosed stairways and external stairways in Class 1 or 10 buildings or the internal parts of sole occupancy units in a Class 2 or Class 3 building or a Class 4 part, provided that:

1. The components are manufactured by Spiralworks Pty Ltd to the specific design for each installation and installed in accordance with the manufacturer's installation manual 'Spiralworks' Installation brochure (2007).

Note: This manual is available on request from Spiralworks Pty Ltd (ABN 83 169 299 129), 54 Frankston Gardens Drive, Carrum Downs VIC 3201 (Facsimile 03 9775 0644, e-mail [info@spiralstairs.com.au](mailto:info@spiralstairs.com.au)).

2. The stairs are supplied with installation instructions.
3. A continuous handrail is installed.
4. The spacing between balusters is not more than 125mm on balconies and landings, and the spacing of the riser opening is not more than 125 mm.
5. For timber ground floors, double floor joists should be used where the stair column is located and a foundation support should be inserted directly below the stair column.
6. For applications on second or higher storeys and on suspended floors, a suitably qualified engineer be engaged to design the support mechanism for the stairs.

*Note:* Safety of young children should be considered with each application. An optional safety gate is available for the top or the bottom of the stair, which can be removed when no longer required. Only the approved gate should be used which enables users of the stair to see the first riser before they open the gate.

### BUILDING CODE of AUSTRALIA 2007

In the opinion of CSIRO Appraisals, the system described in this Technical Assessment and installed under the conditions listed herein will satisfy the performance requirements of Clause DP2 and DP3 for Volume 1- Class 2 to Class 9 Buildings) provided that it used only in the internal parts of a sole occupancy unit in a Class 2 or 3 building or Class 4 part and clause P2.5.1 (Volume 2 - Class 1 and Class 10 Buildings Housing Provisions) of the Building Code of Australia.

#### Notes:

- (i) The inclusion of this clause with reference to the BCA is aimed at assisting those involved in the design, specification and building approval/permit process, relating the Appraisal to the relevant Performance Requirements of the BCA.
- (ii) Users of this Technical Assessment must review and determine the impact of any amendments made to the BCA including referenced documents after the date of publication of this Technical Assessment.

## RELATED INFORMATION

### VALIDITY OF THE ASSESSMENT

#### **Condition:**

This Technical Assessment applies only to the use of the Spiralworks stair system as described herein.

#### **Withdrawal:**

This Technical Assessment will be withdrawn or amended if CSIRO Appraisals considers that a change in design or manufacturing quality renders the basis of appraisal invalid, or if reported field experience convinces CSIRO Appraisals of unsatisfactory quality or performance.

This Technical Assessment is valid until 31 December 2009. Technical Assessments may be amended during the term of validity. Users of this Technical Assessment must verify that it remains valid and is the current version by checking on the CSIRO Appraisals website: <http://www.cmmt.csiro.au/services/appraisals/> or by calling CSIRO Enquiries on 1300 363 400.

### RELEVANT DOCUMENTS

Spiralworks Pty Ltd, 'Stairs and Accessories'

Spiralworks Pty Ltd, 'Installation Instructions'

Spiralworks Pty Ltd, 'Information Fact Sheet 1300/12 Spiral Stair' (2007)

Spiralworks Pty Ltd, 'Information Fact Sheet 1500/14 Spiral Stair' (2007)

Spiralworks Pty Ltd, 'Information Fact Sheet 1800/16 Spiral Stair' (2006)

Spiralworks Pty Ltd, 'Information Fact Sheet 1900/16 Spiral Stair' (2006)

## APPROVED ASSESSMENT EXTRACT

The 1300/12, 1500/14, 1800/16, and 1900/16 Spiral Stairs as manufactured by Spiralworks Pty Ltd (ABN 83 169 299 129) Carrum Downs, Victoria is suitable for use as enclosed stairways and external stairways in Class 1 or 10 buildings or the internal parts of sole occupancy units in a Class 2 or Class 3 building or a Class 4 part when the conditions of CSIRO Appraisals Technical Assessment 336 are fulfilled.

# APPRAISAL

## DESCRIPTION

The following description is based on information provided by the applicant.

### General:

The Spiralworks stair system is a spiral stair with tapered treads and a continuous handrail on one side. Stairs are available for internal or external application, and can be assembled in either anti-clockwise or clockwise spirals. An optional safety gate is available to restrict access to the top and/or the bottom of the stair.

All steel components are finished with an oven-baked powdercoat. This is available in a range of colours. PVC handrails are also available in a range of colours.

All treads, handrails, centre column and other stair components are mechanically assembled on-site.

### Components:

#### 1. Treads and risers:

Treads are made from 4mm mild steel plate, which is laser cut and folded to a uniform shape and size for each diameter. 35 mm timber tread overlays come as standard. Risers of uniform height between 183 mm and 220 mm are supplied. The timber treads for internal use have three grooves near nosing which extends length of tread to provide slip resistance. The steel stair tread for external use is galvanized chequer plate to provide slip resistance.

#### 2. Handrails and balusters:

Balusters are made from square tubular 19 mm OD 1.6 gauge mild steel. The hand rail is continuous on one side of the stairs with a minimum height above the tread nosing of 865 mm and 1000 mm above landings. There is a maximum spacing between balusters of 125 mm. Balusters are spaced with a maximum gap of 120 mm on balconies. Handrail posts at the top and bottom of the stairs are 50 mm OD 1.6 gauge mild steel.

The handrail is 40 mm × 8 mm mild steel with PVC covering of 50 mm × 8 mm.

#### 3. Columns:

Columns are made from 114.3 mm diameter 4.3 mm thick mild steel pipe.

#### 4. Design:

Spiralworks Pty Ltd provide a design service when stairs are required to be a non-uniform height. The client is required to supply drawings providing details of the prospective installation to enable Spiralworks Pty Ltd to provide a suitable design.

#### 5. Packing:

The stairs come in kit form. The kits contain steel treads, timber tread overlays, baluster posts, newel posts, landing, landing handrails around top opening, handrail segments, handrail cover, centre column cover plate, all bolts required for assembly, can of touch-up paint, and installation brochure. Each component is individually wrapped in bubble wrap & packed into Sampall (thick cardboard box) secured to timber pallet. Package size is 1100mm<sup>3</sup>.

#### 6. Installation:

Spiralworks Pty Ltd provides an installation service and assists customers with specifying the correct stair kit for the customer's application. For self-installation by the client, a step by step brochure is included. Installation by experienced tradespeople is recommended. There is no welding, cutting or grinding required.

#### 7. General geometry:

Stairs are available in four widths. Each width is available in a range of riser heights to enable different floor to floor heights to be accommodated with equal risers for each tread. The headroom also varies depending on the width of stair, height of riser, and angle of landing.

Nominal stair diameter (mm)

	1300	1500	1800	1900
<i>Measurements in this table are in mm</i>				
<b>Clear width</b>	<b>525</b>	<b>625</b>	<b>760</b>	<b>820</b>
<b>Baluster spacing (max) on stairs</b>	<b>125</b>	<b>120</b>	<b>120</b>	<b>120</b>
<b>Riser</b>	<b>205 to 220</b>	<b>205 to 220</b>	<b>183 to 195</b>	<b>183 to 195</b>
<b>Headroom 90° (minimum)*</b>	<b>2080</b>	<b>2080</b>	<b>2060</b>	<b>2060</b>

\* Headroom measurements are for minimum riser heights. Every 1 mm increase in riser will increase headroom by 12 mm.

### Specifications:

Product specifications are provided in the Spiralworks Pty Ltd Information Fact Sheets:  
 '1300/12 Spiral Stair' (2007);  
 '1500/14 Spiral Stair' (2007);  
 '1800/16 Spiral Stair' (2006); &  
 '1900/16 Spiral Stair' (2006).

## DESIGN INFORMATION

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### **General:**

The Spiralworks stair system is a steel spiral stair system. The treads are made from sheet metal box sections with timber tread overlays as standard. The balusters are tubular steel and the handrails are flat steel. The components are powder coated in the factory. The structure is mechanically jointed to enable on-site assembly by competent tradespeople. Three sizes are available.

### **Design Considerations:**

A design service is available on request.

### **Durability:**

In the opinion of CSIRO, the Spiralworks stair system is suitable for internal and external use. The Spiralworks stair system has powder coating finish for internal use and is hot-dipped galvanised stairs and stainless steel for external use.

## BASIS OF APPRAISAL

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CSIRO Appraisals has assessed the following aspects in undertaking this appraisal:

- (a) The applicant's installation instructions;
- (b) The physical properties of the materials; and
- (c) The manufacturer's information.

The following documents and inspections were used in carrying out the appraisal:



Simon Hanson  
CSIRO Appraisals

### **Manufacturer's Information:**

1. **Spiralworks Pty Ltd (ACN 169 299 129), 54 Frankston Gardens Drive Carrum Downs, VIC 3201:** Stairs and Accessories. This brochure contains general information on the stair systems.
2. **Spiralworks Pty Ltd (ACN 169 299 129), 54 Frankston Gardens Drive Carrum Downs, VIC 3201:** Information Fact Sheet 1300/12 (2007).  
Information Fact Sheet 1500/14 (2007).  
Information Fact Sheet 1800/16 (2006).  
Information Fact Sheet 1900/16 (2006).  
These sheets include specifications for the treads, handrails, balcony railings, and show base plate details for masonry and timber, and provide different requirements for various floor to floor height scenarios.
3. **Spiralworks Pty Ltd (ACN 169 299 129), 54 Frankston Gardens Drive Carrum Downs, VIC 3201:** Installation Instructions. This provides information on the installation of the stairs.

### **Other:**

1. **CSIRO Manufacturing and Materials Technology, Graham Rd Highett VIC. Letter dated 28 May 2007:** This letter confirms that as a consequence of the assignment of agreement dated 17 March 2006 with Economy Spiral Stairs, the applicant for CSIRO Technical Assessment 336 is now Spiralworks Pty Ltd.

### **Inspections:**

CSIRO Appraisals has inspected factory production and installations of the system and found them to be satisfactory.





CSIRO Appraisals is a project of CSIRO Manufacturing and Infrastructure Technology providing a range of assessment products including:

- Technical Assessments – full fitness for purpose appraisals of innovative products, systems or materials that may or may not be covered by Australian Standards or building regulations.
- Interim Reports – appraisals of products that have not yet reached the fully developed or manufacturing phase. They aid with product development and may be used as a step towards a subsequent Technical Assessment.
- Certification Assessments – appraisals of products, systems or materials solely against the requirements of the BCA and used for gaining approval from Federal or State authorities.

From 1978, under the auspices of the Australian Building Systems Appraisal Council (ABSAC), CSIRO ran an appraisal service in conjunction with the Australian Institute of Building Surveyors, the Housing Industry Association, the Insurance Council of Australia and the Master Builders Association. In 1999, CSIRO Appraisals was formed to continue the business of ABSAC under the sole patronage of CSIRO. This new scheme retains the committee structure of technical and interstate advisers that operated as ABSAC. All past ABSAC publications and appraisals are being continued and supported by CSIRO Appraisals.

CSIRO Appraisals is a founding member of the World Federation of Technical Assessment Organizations

Technical Assessments are intended to help all those concerned with the approval, specification and use of new

products or systems. They are objective assessments of the fitness for purpose of the product, system or material but are not approvals or endorsements. They may be submitted to approval authorities as part of the justification process required to obtain approval.

Each Technical Assessment has been prepared by CSIRO Appraisals and then reviewed, revised and finally endorsed by the Technical Advisory Committee (TAC), detailed below. CSIRO makes the appraisals on a national basis by obtaining input from regional committees in each State and Territory to take account of variations in local building regulations, practice and local climatic features.

CSIRO Appraisals bases its assessment on the product and information it receives and cannot accept responsibility for deviations in the manufactured quality and performance of the material, product or system. However, Technical Assessments will be withdrawn where adequate quality or performance has not been maintained.

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Spiralworks 1300 137 392**5. TITLE/SUBTITLE****THE SPIRALWORKS****6. AUTHOR(S)** *(Give Affiliation of External Authors or Co-authors)*S Hanson  
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**H. RELATED DOCUMENTS****J. OTHER/OPTIONAL INFORMATION****14. ABSTRACT** *(CSIRO Appraisals Approved Assessment Extract)*

The 1300/12, 1500/14, 1800/16, and 1900/16 Spiral Stairs as manufactured by Spiralworks Pty Ltd (ABN 83 169 299 129) Carrum Downs, Victoria is suitable for use as enclosed stairways and external stairways in Class 1 or 10 buildings or the internal parts of sole occupancy units in a Class 2 or Class 3 building or a Class 4 part when the conditions of CSIRO Appraisals Technical Assessment 336 are fulfilled.