

Overview

This document describes how to use a digital pen and Destiny Wireless Australia services to gather information directly from a site, in particular from a construction site where risk assessments are conducted.

The first objective is to make sure that each field worker goes through a checklist of risk control measures, read the relevant SWMS, signed and confirm which reference documents were used in the assessment.

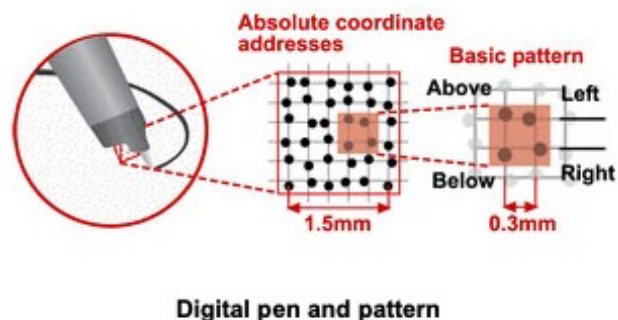
The second objective is to send an electronic copy of the paper work as quickly as possible to head office (which would also include the reference documentation).

The third objective is to file all these electronic documents properly, with the ability to search / retrieve / attach if necessary to any other documents associated to the Job. The data collected can also be analysed and used by management in future trainings to reduce hazards.

How does it work?

The Risk Assessment or SWMS form is printed with a micro pattern only visible to a Digital Pen supplied by Destiny Wireless Australia.

Field workers would use the pen to write on the paper form. The pen has an infra-red camera and takes black and white pictures of the dot pattern when the nib is pressed. The coded pattern is like a map returning {x,y} coordinates of where the pen strokes are on paper, and at what time.



Digital pen and pattern

The data is extracted from the pen by a small software installed on a mobile phone or a PC and is routed to the digital pen cloud server.

An electronic copy of the form is filed in a database, with some handwritten pen strokes converted to text where appropriate, in just a few of seconds. An administrator using the Silhouette Form Utility on a desktop at the office is able to look at all the documents, the resulting data and share PDF copies if requested.

Attachments

It is also possible to attach with the forms a few pictures or videos. For example a few pictures of the sites are taken with a mobile phone and when the mobile router software extracts the data from the pen, it could also associate the pictures to that transactions.

The office administrators can see the pictures and select which ones to include in a PDF copy of each record, or they could play the short videos in the Silhouette Form viewer utility.

Example of a Risk Assessment and SWMS

The following is an example of a form that would require each field worker and their supervisor to complete, sign and return to the office:

Client		Job #
Address		Order #
Reason For Visit To Site		ATCW #
<div> <div> SITE SETUP Risk Rating: </div> <div> SAFE ACCESS Risk Rating: </div> <div> MANUAL HANDLING Risk Rating: </div> </div>		
<div> <div> Is there a site emergency evacuation process? </div> <div> Does the work area have a safe means of access? </div> <div> Does the job involve heavy manual handling? </div> </div>		
<div> <div> Is a first aid kit available? </div> <div> Can you get all of your equipment to the work area safely? </div> <div> Do you have the appropriate equipment or resources for the manual handling activity? </div> </div>		
<div> <div> Is there a risk of exposure to asbestos? </div> <div> Do you need to enter a confined space? </div> <div> WORKING ALONE Risk Rating: </div> </div>		
<div> <div> If working in a public area has the site been segregated? </div> <div> Is there an emergency escape route available from the access area? </div> <div> Will you be carrying out this work alone? </div> </div>		
<div> <div> Are other subcontractors likely to perform work close by that may pose a risk to your safety? </div> <div> Are there any slip, trip or fall hazards? </div> <div> Do you have a means of communication? (mobile phone, etc.) </div> </div>		
<div> <div> ELECTRICAL SAFETY Risk Rating: </div> <div> WORKING AT HEIGHTS Risk Rating: </div> <div> OTHER HAZARDS </div> </div>		
<div> <div> Could you safely be placed at risk by working on or near energised systems? </div> <div> Will you be working from a level where you could potentially fall to another level? </div> <div> Are you working within two metres of an unprotected roof or other drop (e.g. skylight)? </div> </div>		
<div> <div> Can the electrical works be completed with the power off? </div> <div> Is full protection equipment available for your use? </div> <div> Are roofs and ceiling voids provided with safe walkways and access? </div> </div>		
<div> <div> Have you completed an isolation termination of services permit? </div> <div> Are you using an elevated work platform? </div> <div> RISK CONTROL MEASURES </div> </div>		
<div> <div> Do all electrical appliances and leads have a current test tag? </div> <div> Are you using a ladder (for access, egress and work of a short duration only)? </div> <div> </div> </div>		
<div> <div> ISOLATIONS Risk Rating: </div> <div> HAZARDOUS CHEMICALS Risk Rating: </div> <div> PERSONAL PROTECTIVE EQUIPMENT </div> </div>		
<div> <div> Does the work require the isolation of an energy source (electrical, pressurised fluids, mechanical hydraulic)? </div> <div> Are you using hazardous chemicals? </div> <div> Hard Hat </div> </div>		
<div> <div> Have you completed an isolation termination of services permit? </div> <div> Do you have up-to-date Safety Data Sheets available for the hazardous chemicals? </div> <div> Protective Footwear </div> </div>		
<div> <div> Have you conducted a whole circuit isolation as well as a local isolation? </div> <div> Do you have the correct PPE available as defined in the SDS? </div> <div> Safety Glasses </div> </div>		
<div> <div> Have Danger Tags and Locks been applied? </div> <div> Are all chemical containers labelled? </div> <div> Protective Gloves </div> </div>		
<div> <div> Is a standby person available? </div> <div> </div> <div> P2 masks </div> </div>		
<div> <div> SWMS reference <input checked="" type="checkbox"/> Carpentry <input checked="" type="checkbox"/> Demolition <input checked="" type="checkbox"/> Electrical <input checked="" type="checkbox"/> Plumbing </div> <div> Applicable SWMS # 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 </div> </div>		
<div> <div> Service Performed <input checked="" type="checkbox"/> Installation <input checked="" type="checkbox"/> Service Call Out <input checked="" type="checkbox"/> Emergency After Hours Call Out <input checked="" type="checkbox"/> Maintenance </div> <div> Risk Rating Notes L: Low M: Medium H: High </div> </div>		
DETAILS OF WORKS COMPLETED:		
The following workers have been inducted into this Safe Work Method Statement (SWMS), and this SWMS has been developed through consultation with these workers who have read, understood, and signed this Safe Work Method Statement register.		
Print Names	Dates	Signatures
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
Person responsible for reviewing SWMS		
	DD/MM/YY	

The different parts of the form

The form can be decomposed in 4 parts A-D.

- A) The Header
- B) The Checklist and Risk Rating
- C) The SWMS reference to include
- D) The Names and Signatures

The Header

It can be written on site or typed in advance at the office and the supervisor can take the paper forms with the printed information and bring it on site. To associate the printed information with the pen strokes, the pen user would need to write a copy of the ATCW # (Authority To Commence Work).

The Risk Rating

The rating is simply Low / Medium / High / Extreme and the checklist gives more details to management. This part of the form is converted to data and can be analysed, displaying various statistics on risks encountered and also ensuring that the form is filled before work commences. Indeed, the pen strokes have a timestamp and the time of writing in this section is displayed.

SITE SETUP		Risk Rating: <input type="text" value="L"/>	SAFE ACCESS		Risk Rating: <input type="text" value="L"/>	MANUAL HANDLING
Is there a site emergency evacuation process?	<input checked="" type="checkbox"/>	Does the work area have a safe means of access?	<input checked="" type="checkbox"/>	Does the job involve manual handling activities?		
Is a first aid kit available?	<input checked="" type="checkbox"/>	Can you get all of your equipment to the work area safely?	<input checked="" type="checkbox"/>	Do you have the appropriate handling activity?		
Is there a risk of exposure to asbestos?	<input checked="" type="checkbox"/>	Do you need to enter a confined space?	<input checked="" type="checkbox"/>	WORKING AT HEIGHT		
If working in a public area has the site been segregated?	<input checked="" type="checkbox"/>	Is there an emergency escape route available from the access area?	<input checked="" type="checkbox"/>	Will you be carrying out the work?		
Are other subcontractors likely to perform work close by that may pose a risk to your safety?	<input type="checkbox"/>	Are there any slip, trip or fall hazards?	<input checked="" type="checkbox"/>	Do you have a method statement?		

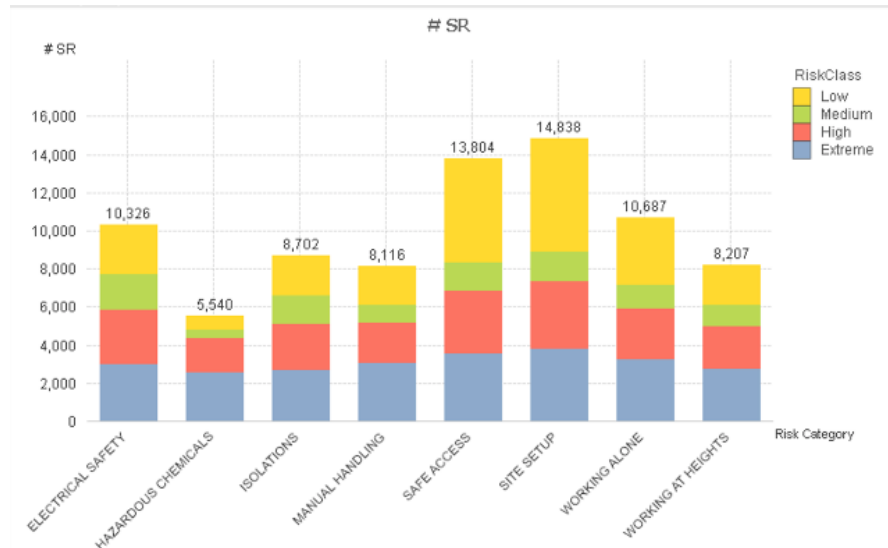
SITE SETUP		Risk Rating: <input type="text" value="L"/>	SAFE ACCESS		Risk Rating: <input type="text" value="L"/>	MANUAL HANDLING
Is there a site emergency evacuation process?	<input checked="" type="checkbox"/>	Does the work area have a safe means of access?	<input checked="" type="checkbox"/>	Does the job involve manual handling activities?		
Is a first aid kit available?	<input checked="" type="checkbox"/>	Can you get all of your equipment to the work area safely?	<input checked="" type="checkbox"/>	Do you have the appropriate handling activity?		
Is there a risk of exposure to asbestos?	<input checked="" type="checkbox"/>	Do you need to enter a confined space?	<input checked="" type="checkbox"/>	WORKING AT HEIGHT		
If working in a public area has the site been segregated?	<input checked="" type="checkbox"/>	Is there an emergency escape route available from the access area?	<input checked="" type="checkbox"/>	Will you be carrying out the work?		
Are other subcontractors likely to perform work close by that may pose a risk to your safety?	<input type="checkbox"/>	Are there any slip, trip or fall hazards?	<input checked="" type="checkbox"/>	Do you have a method statement?		

Risk Rating Statistics

Various statistics and charts can be produced using the data collected from these forms.

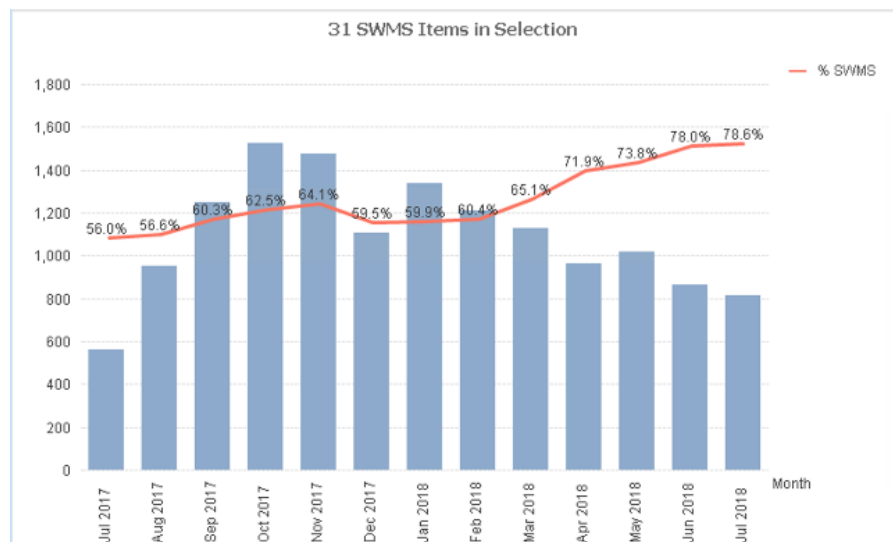
This chart shows that there are quite a few services where the risk rating is extreme or high, mainly related to site setup and safe access.

This information can be used for Training and Workshops.



But the key to this application is to ensure that a risk assessment is done by most and that it is conducted and reported before anything else.

This chart shows how management turned around the situation and moved the number of SWMS associated to each service report from 50% to 80%.



The SWMS Reference to include

This part of the SWMS form allows the technicians on site to include in the documentation what detailed documentation they have used as a reference to remove or minimise the risks. They can also attach pictures of the site.

SWMS reference	<input checked="" type="checkbox"/> Carpentry	<input checked="" type="checkbox"/> Demolition	<input checked="" type="checkbox"/> Electrical	<input checked="" type="checkbox"/> Plumbing																											
Applicable SWMS #	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31
Service Performed	<input checked="" type="checkbox"/> Installation	<input checked="" type="checkbox"/> Service Call Out	<input checked="" type="checkbox"/> Emergency After Hours Call Out	<input checked="" type="checkbox"/> Maintenance																											
Risk Rating Notes				L: Low M: Medium H: High																											
DETAILS OF WORKS COMPLETED: <i>Test of new Digital Pen and SWMS form</i>																															

Names and Signatures

The last part of the form is where each field worker writes her/his name, date and signature confirming that the risk control measures are in place.

It is important to note that although the data collected from pen strokes can be edited or validated, the pen strokes cannot be edited or changed.

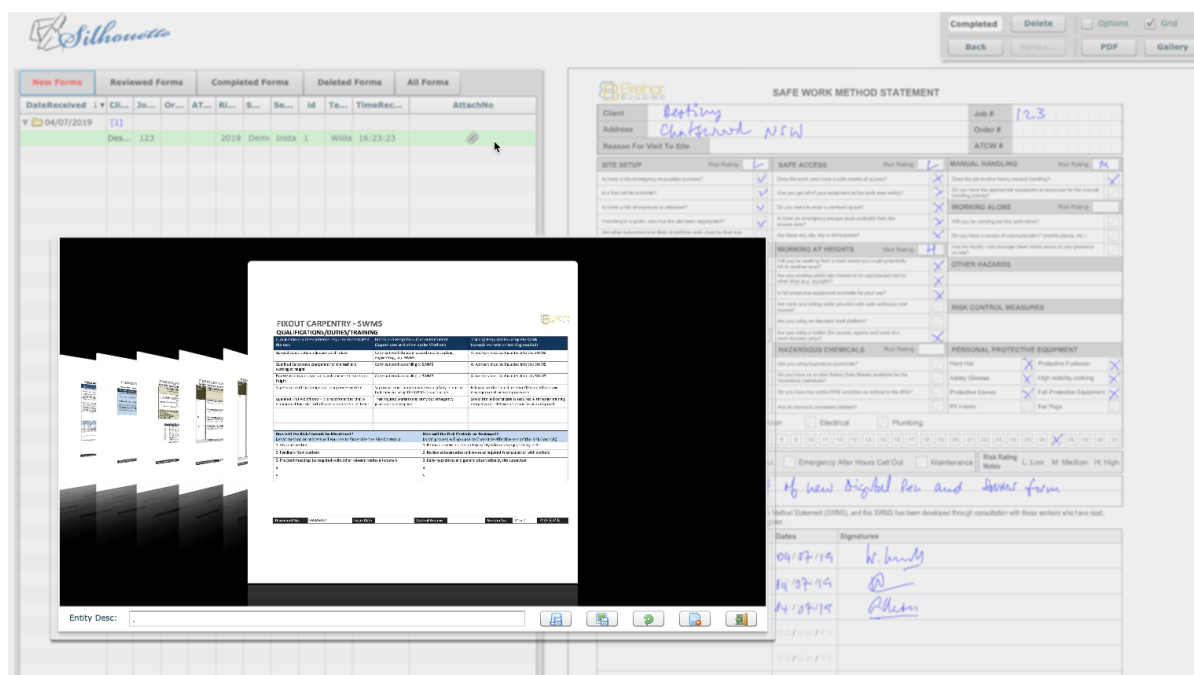
The following workers have been inducted into this Safe Work Method Statement (SWMS), and this SWMS has been developed through consultation with these workers who have read, understood, and signed this Safe Work Method Statement register.

Print Names	Dates	Signatures
William	04/07/19	<i>W. Henry</i>
Wendy	04/07/19	<i>Wendy</i>
Gillian	04/07/19	<i>Gillian</i>
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
Person responsible for reviewing SWMS		
William	04/07/19	<i>W. Henry</i>

The Silhouette Form Utility

The Form Utility is the user interface of the Silhouette software which displays the forms processed, the pen strokes and the converted data using handwriting recognition neural networks.

It acts as a document repository system, where each login has pre-defined access rights to form types and transactions, and it allows users to search any forms using a series of filters and extract PDF copies when necessary.



The screenshot displays the Silhouette Form Utility interface. On the left, there is a table listing various forms with columns for Date Received, Client, Job, Order #, ATW #, ID, Time Rec, and Attach No. A specific form is highlighted in green. On the right, a detailed view of a 'SAFE WORK METHOD STATEMENT' is shown. This form includes sections for Client Information (Destiny, Chatswood NSW), Job # (123), and various safety checklists such as 'SAFE ACCESS', 'MANUAL HANDLING', 'WORKING ALONE', 'WORKING AT HEIGHTS', 'HAZARDOUS CHEMICALS', 'PERSONAL PROTECTIVE EQUIPMENT', and 'RISK CONTROL MEASURES'. The form is filled out with handwritten text and checked boxes. At the bottom, there is a section for 'Dates' and 'Signatures' with handwritten entries for 04/07/19 and 04/07/19, signed by 'H. Hardy' and 'A. Hardy'.

The above image illustrates the attached pages (the reference SWMS) of 1 specific form record.

Another function of the Form Utility

If the form utility is used to see the forms received and processed data, edit it or validate it, it can also be used to create new records and input information to pre-print on the dotted paper forms.

The next page describes in more details this optional feature.

[illegible]

Important Key to copy

Information pre-printed

SAFE WORK METHOD STATEMENT

Client: Destiny Wireless Australia
Address: 18 Smith Street Chatswood NSW
Reason For Visit To Site: Testing digital pens

Job #: 4321
Order #: 2
ATCW #: 2

SITE SETUP Risk Rating: **FE**

Is there a site emergency evacuation process? **No**
Is a first aid kit available? **2019-08-16 15:00:56**
Is there a risk of exposure to asbestos? **No**
If working in a public area has the site been segregated?
Are other subcontractors likely to perform work close by that may pose a risk to your safety?

SAFE ACCESS Risk Rating: **L**

Does the work area have a safe means of access?
Can you get all of your equipment to the work area safely?
Do you need to enter a confined space?
Is there an emergency escape route available from the access area?
Are there any slip, trip or fall hazards?
Are there any slip, trip or fall hazards?

WORKING AT HEIGHTS Risk Rating: **L**

Will you be working from a level where you could potentially fall to another level?
Are you working within two metres of an unprotected roof or other drop (e.g. skylight)?
Is fall protection equipment available for your use?
Are you using an elevated work platform?

MANUAL HANDLING Risk Rating: **L**

Does the job involve heavy manual handling?
Do you have the appropriate equipment or resources for the manual handling activity?
WORKING ALONE Risk Rating: **L**
Will you be carrying out this work alone?
Do you have a means of communication? (mobile phone, etc.)
Has the facility / site manager been made aware of your presence on site?

OTHER HAZARDS

RISK CONTROL MEASURES

PERSONAL PROTECTIVE EQUIPMENT

William
Send him home

Brehar BUILDING

SAFE WORK METHOD STATEMENT

Client: **Destiny Wireless Australia**
Address: **18 Smith Street Chatswood NSW**
Reason For Visit To Site: **Testing digital pens**

Job #: **4321**
Order #: **2**
ATCW #: **2**

SITE SETUP Risk Rating: **FE**

Is there a site emergency evacuation process? **No**
Is a first aid kit available? **2019-08-16 15:00:56**
Is there a risk of exposure to asbestos? **No**
If working in a public area has the site been segregated?
Are other subcontractors likely to perform work close by that may pose a risk to your safety?

SAFE ACCESS Risk Rating: **L**

Does the work area have a safe means of access?
Can you get all of your equipment to the work area safely?
Do you need to enter a confined space?
Is there an emergency escape route available from the access area?
Are there any slip, trip or fall hazards?
Are there any slip, trip or fall hazards?

WORKING AT HEIGHTS Risk Rating: **L**

Will you be working from a level where you could potentially fall to another level?
Are you working within two metres of an unprotected roof or other drop (e.g. skylight)?
Is fall protection equipment available for your use?
Are you using an elevated work platform?

MANUAL HANDLING Risk Rating: **L**

Does the job involve heavy manual handling?
Do you have the appropriate equipment or resources for the manual handling activity?
WORKING ALONE Risk Rating: **L**
Will you be carrying out this work alone?
Do you have a means of communication? (mobile phone, etc.)
Has the facility / site manager been made aware of your presence on site?

OTHER HAZARDS

RISK CONTROL MEASURES

PERSONAL PROTECTIVE EQUIPMENT

William
Send him home

ISOLATIONS Risk Rating: **M1**

Does the work require the isolation of an energy source (electrical, pressurised fluid, mechanical, hydraulic)?
Have you completed an isolation termination of services permit?
Have you conducted a whole circuit isolation as well as a local isolation?
Have Danger Tags and Locks been applied?
Is a standby person available?

HAZARDOUS CHEMICALS Risk Rating: **L**

Are you using hazardous chemicals?
Do you have up to date Safety Data Sheets available for the hazardous chemicals?
Do you have the correct PPE available as defined in the SDS?
Are all chemical containers labelled?




SWMS reference ☐ Carpentry ☒ Demolition ☒ Electrical ☒ Plumbing ☒ Flentrical

Applicable SWMS # **1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31**

Service Performed ☐ Installation ☒ Service Call Out ☐ Emergency After Hours Call Out ☐ Maintenance Risk Rating Notes: L: Low M: Medium H: High

Testing for works and DigiPen Testing no-printing and digital Pen

The following workers have been included into this Safe Work Method Statement (SWMS), and this SWMS has been developed through consultation with these workers who have read, understood, and signed this Safe Work Method Statement register.

Print Names	Dates	Signatures
WENDY	16/08/19	
William	16/08/19	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
	DD/MM/YY	
Person responsible for reviewing SWMS		
William	16/08/19	

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