

Asset Data Capture

Successful Implementation for Day-to-day
Maintenance Management and Long-term Asset
Management Planning

Presenters:

Steph Forrest, Associate Director FM,
Victoria University of Wellington

Tom Clarke, Manager Construction Services, SPM Assets

Outline

- Background
- Project scope and set-up
- Implementation, roll out & technology
- Graphical outputs
- Current application of data
- Future - maintaining the data – SPM tools
- Learning

Background

- Why was this project necessary?
 - Data degradation since 2009
 - Non-alignment of data (including naming convention and asset hierarchy) between SPM Assets and BEIMS
 - Experience over 3-4 years had delivered clarity around outcomes sought

VUW Preparation

- VUW needed to ensure Space Database was put into BEIMS which became foundation for Asset Hierarchy
- Align naming convention between BEIMS & SPM Assets (adopted SPM as “locked down”)
- Determine desired level of data granularity
- Data Integrity Programme (other related projects)

Project Scope

- 165 buildings
- 4 campuses
- \$700 million + value
- 210,000m² floor area
- 123,000 components



Project Set-Up

- Initial project scoping workshop early Dec 2011
- SPM produced a report documenting key outcomes required and database design requirements
- SPM created new VUW database with property areas linked 1:1 with those in BEIMS (ex space database)
- Set up Project Steering & Operational Groups for regular reporting

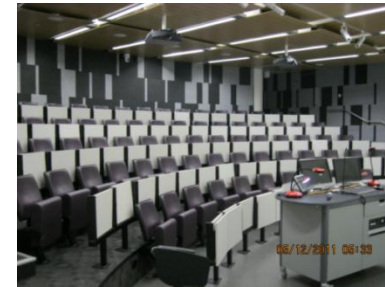
Pilot Survey - Objectives

- To agree:
 - Level of detail to be collected
 - Standard Component Reference Library
 - Survey & QA process
- To test:
 - Data transfer process to BEIMS

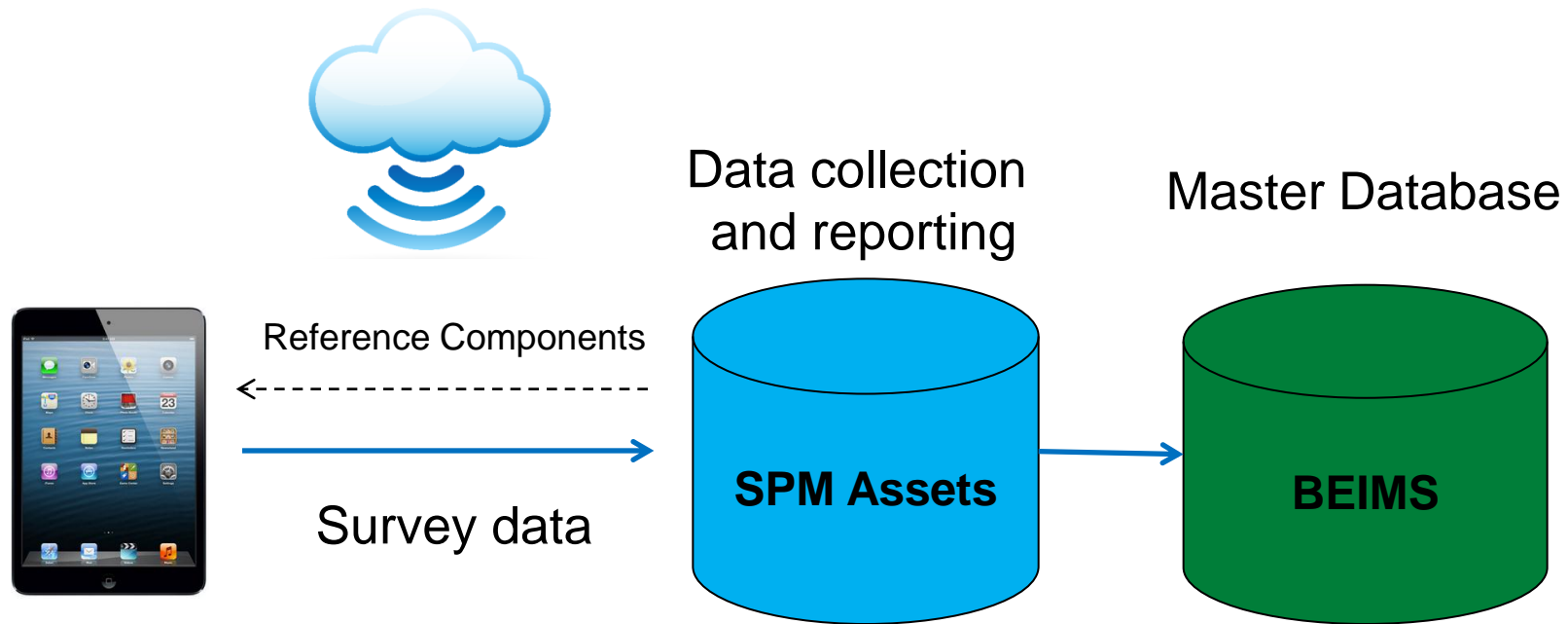


Pilot Project Outcomes - Report

- We agreed:
 - Level of detail for survey
 - Component Reference Library
 - Documented survey & QA protocols
 - SPM Assets database configuration
- We also:
 - Finalised the link to BEIMS
 - Developed and tested the data transfer process
 - Wider discussion on related issues

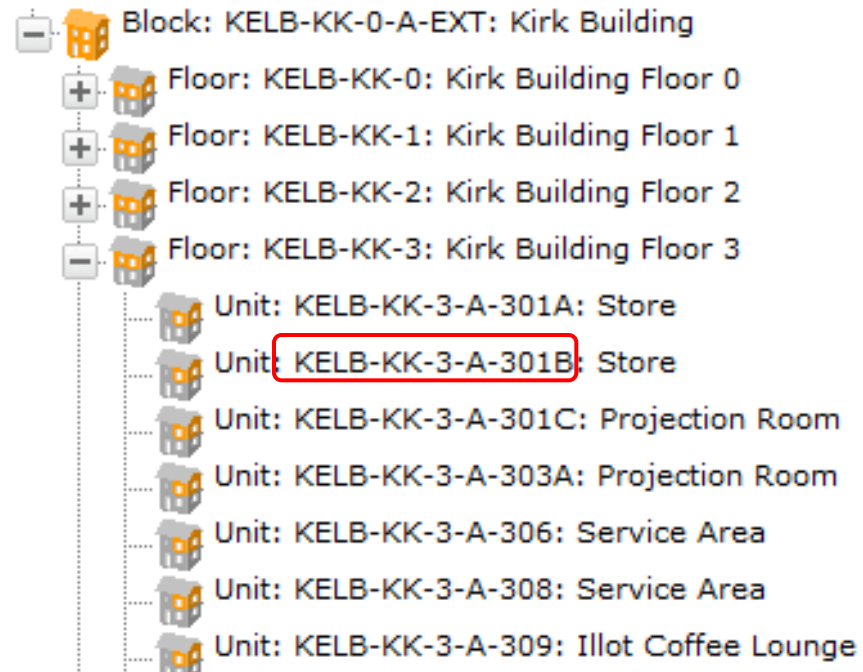


The Process



Building Hierarchy

- Agreed building, floor, room hierarchy from VUW space database
- Naming convention aligned



Asset Component Reference Library

REFERENCES

Categories
Components
Default

- Exterior Wks, Sundrie
- External Fabric
- Interior Finishes
- Services
 - Electrical
 - Fire Services
 - Lifts / Hoist
 - Mechanical
 - Air Compressor
 - Air Conditioner**
 - Air Filtration Un
 - Air Handler Unit
 - Air Handler l
 - Air Handler l
 - Air Handler l
 - Air Handler Units - Damper

SERVICES ♦ MECHANICAL ♦ AIR CONDITIONER - PACKAGE

component * **Air Conditioner - Package**

code / valuation type **MECACP** **Structural**

description **VAN;**

expected life **base (yrs) * 12** low (yrs) * **10** high (yrs) * **16**

comment **ACP**

analysis method **Condition**

criticality

appearance * **medium**

consequence * **medium to high**

safety * **medium to high**

PQS significance: * **3** (calc: 3.85)

comment

replacement cost **base (\$) * 4077** low (\$) * **1825** high (\$) * **7225**

expenditure category: * **capex**

unit of measurement: * **no**

min. condition grade **5**

description low **2.5 kW window/wall mounted**

description high **6.5 kW external wall**

comment **BCG2010**

Main Condition Survey

- SPM Assets trained a team of local surveyors
 - Training on 'Mobile' module (iPads)
 - Surveyor protocols & guidelines
 - Decision tree diagrams
 - Clear process for assigning physical / virtual bar code labels
 - Surveyor daily checking procedures; standard QA reports

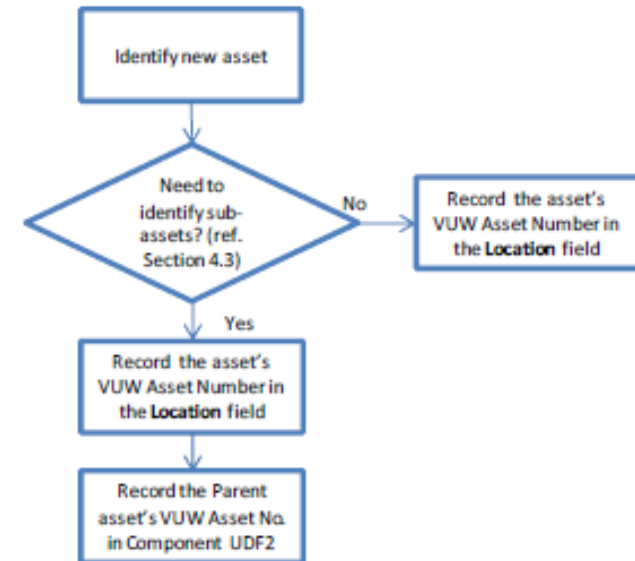


Figure 6.2.1 - Decision Tree Diagram for Recording of Asset Numbers for Components with Sub-components

SPM Assets - Mobile



KELB-KK-0-A-EXT: Kirk Building						
con	name / code	cat-3:building	planned	status	cmp/pqs	
<input type="radio"/>	Kirk Building KELB-KK-0-A-EXT	Kirk Building		FINAL	74/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg External KELB-LB-0-A-EXT	Laby Building		FINAL	30/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Corridor KELB-LB-0-D-D051	Laby Building		FINAL	10/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Corridor KELB-LB-0-D-D052	Laby Building		FINAL	6/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Corridor KELB-LB-0-D-D053	Laby Building		FINAL	4/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Lift Foyer KELB-LB-0-D-D054	Laby Building		FINAL	11/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Main Plant & Boilers KELB-LB-0-D-D066	Laby Building		FINAL	63/0	<input type="checkbox"/>
<input type="radio"/>	Laby Bldg Plantroom (West) KELB-LB-1-D-D161	Laby Building		FINAL	10/0	<input type="checkbox"/>

inf

cmp

pqs

wrk

add

copy

del

save

home

select

logout

SPM Assets - Mobile..



KELB-KK-0-A-EXT: Kirk Building

filter: group by: ☐ name ☐ location ☐ loc./type

sel	location	grp	tpe	name	qty	unit	c1	c2	c3	c4	c5	sub
<input checked="" type="radio"/>	753440	SER	ELE	Fluorescent Lights	36.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753441	SER	ELE	Incandescent Lights	24.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753442	SER	ELE	Light Switches & Powerpoints	43.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753443	SER	ELE	Pole Top Lights (External)	7.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753444	SER	ELE	Sensor	5.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	702243	SER	FIR	Ext. Alarm Panel / Fire Sys.	1.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753446	SER	FIR	Sprinkler System Valve Set	1.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701154	SER	MEC	Axial Ventillation Fans	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701153	SER	MEC	Centrifugal Ventilation Fans	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701152	SER	MEC	Cooling Tower	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	691734	SER	MEC	Cooling Tower	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701150	SER	MEC	Cooling Tower - Fan	1.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701151	SER	MEC	Cooling Tower - Motor	1.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753447	SER	MEC	Ventillation Grilles	47.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753448	SER	SNP	Generic Tap	8.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	10797	SER	SNP	Water Strorage tank	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	701180	SER	SNP	Water Strorage tank	1.00	no	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753449	SER	SPS	CCTV Camera / Monitor	2.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="radio"/>	753450	SER	SPS	Card Reader	6.00	no	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

click on an existing component to select

back add save del pqs

SPM Assets - Mobile...



KELB-KK-0-A-EXT: Kirk Building
SER:MEC:1.00 no Cooling Tower - Motor (701151)

description:
location:
comment:

quantity: ☒ no unit rate cost: \$ 25000
confidence: quantity: h.reliable cost: - na -

cg: C1 C2 C3
arl: r-C1 r-C2 r-C3
confidence: condition: h.reliable

life range: base: upper:
confidence: baselife: - na -

installation yr:

KELB-KK-0-A-EXT: Kirk Building
SER:MEC:1.00 no Cooling Tower - Motor (701151)

comp. code:
comp. barcode:
serial no: Not Found
make: Not found
model:
ownership: - please select -
management: - please select -
Make and Model: Not Found
Parent Asset: 701152
undefined:
gps-1/2: pos map

cond cmp: 68 / 74 / N info
back add save del

cond cmp: 68 / 74 / N info
back add save del

Quality – The Final Hurdle

- In-built business rules – Mobile Module
- Daily surveyor self-checks – Auto reports
- Weekly detailed data checks – SPM Assets
- Formal stages of sign-off for each property
 - Planned | Surveyed | Finalised
- Weekly progress reporting – SPM Assets
- On-site peer reviews - SPM Assets, surveyor

On-going Data Validation

6 Report No. 2 - Survey Data Check Conditions - refer to tab **SDCC Report 2**

- i. Checks that the assessed remaining life is consistent with the assessed condition (column AY to column BC)
- ii. Checks that cloned components have been assessed (column BD)
- iii. Checks for components with a Baseline of 1 (column BE)
- iv. Checks a comment has been entered where a component has been assessed as condition grade 4 (Poor) or condition grade 5 (Very Poor) (column BF)
- v. Checks for components with a replacement cost of zero (column BG)

7 Report No. 3 - Quick Survey Data Check - Refer to tab **QSDC Report 3**

- i. Number of components associated with the property area (column D)
- ii. Checks that the sum of assessed condition is 100% (column E)
- iii. Provides the sum of the Ceiling Area (column F)
- iv. Provides the sum of the Floor Area (column G)
- v. Compares the sum of the Floor and Ceiling component quantities (column H). Returns an “Alert” when the ceiling quantities are greater than twice the floor quantities/ less than half the Floor.

Database – Component Data

SPM ASSETS QUICK SEARCH

VICTORIA UNIVERSITY OF WELLINGTON • KELBURN, 21 KELBURN PARADE • KIRK BUILDING

541 PROPERTIES IN SELECTION

COMPONENTS: KELB-KK-1-A-151: MALE TOILET

location / mapping:	753961														
Interior Finishes	Fixtures & Fittings	Mirror	20	-	100	-	-	-	1.00	no	\$260	A	A	E	<input type="checkbox"/>
location / mapping:	753963														
Interior Finishes	Fixtures & Fittings	Shelving	35	-	100	-	-	-	1.00	m	\$46	A	A	E	<input type="checkbox"/>
location / mapping:	753964														
Interior Finishes	Floor Finishes	Vinyl	20	-	-	100	-	-	15.00	m2	\$675	A	A	E	<input type="checkbox"/>
location / mapping:	753962														
Interior Finishes	Interior Doors	Door Closer	25	100	-	-	-	-	1.00	no	\$469	A	A	E	<input type="checkbox"/>
location / mapping:	753965														
Interior Finishes	Interior Doors	Doors - Solid	50	-	-	-	100	-	1.00	no	\$661	A	A	E	<input type="checkbox"/>

total number of components: 18 priced total: \$26,346

delete add new edit

COMPONENT: INTERIOR FINISHES • FLOOR FINISHES • VINYL # 46253 (C)

comp. group: Interior Finishes
comp. type: Floor Finishes
component: Vinyl
description: none
location: 753962

base life: 20
base life upper: 24
base life lower: 16
confidence: not assign

criticality: medium
appearance: medium
consequence: medium
safety: medium

quantity: 15.00 unit: m2 rate \$ 45
replacement cost: \$ 675
condition: C1 C2 C3 100 C4 C5
remaining life: R-C1 R-C2 R-C3
minimum cond. grade: 5.0

confidence: highly reli
cost: not assign

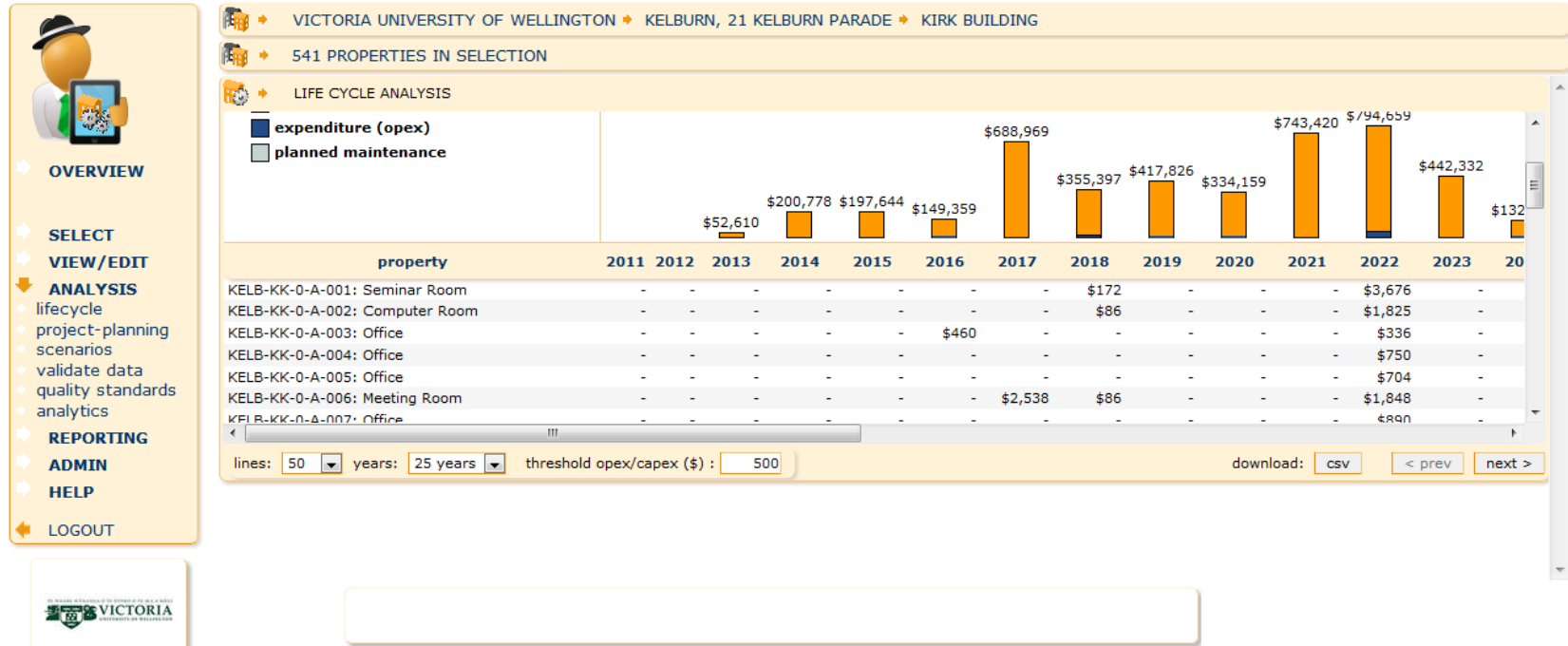
comment: Cracked at wall cove
data source: - please select -

construction year survey year (2012)
created: 15/02/2012 17:13: last modified: 23/07/2012 17:38

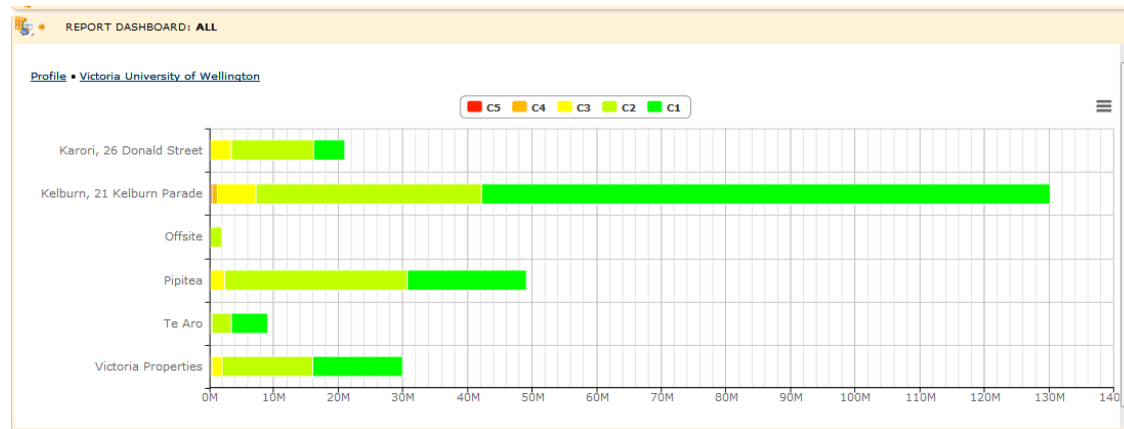
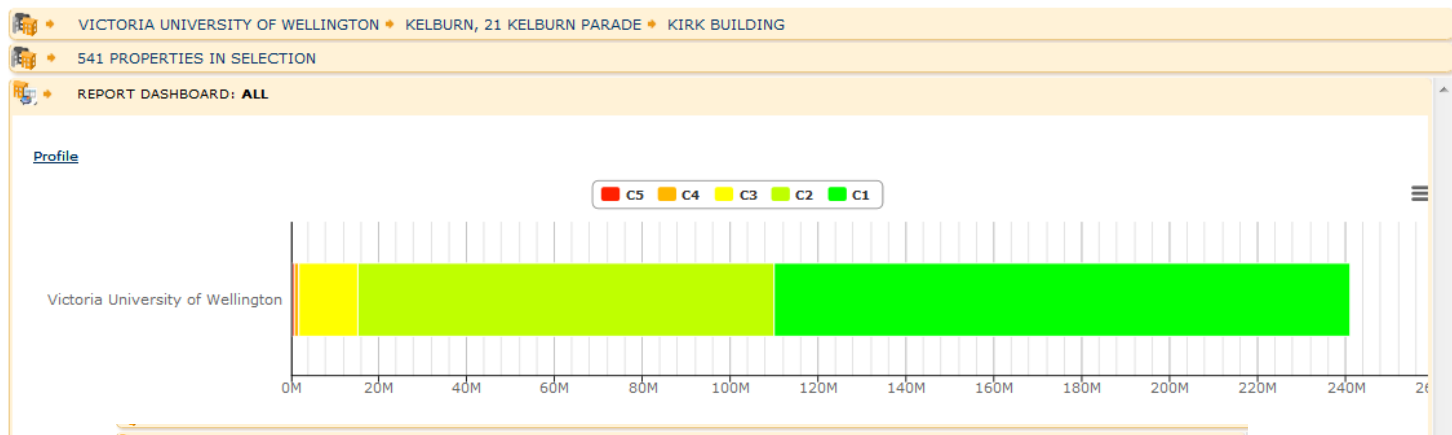
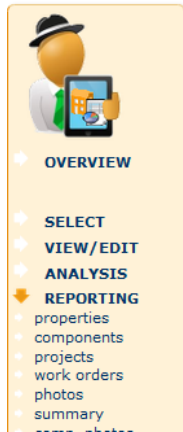
archive component copy delete add new save

component details maintenance info history projects docs

Graphical Outputs – Lifecycle



Graphical Outputs – Dashboard



SPM Output – for SAMP

130611 Scenario 3 Fin Analysis 2013 v6 PH (Autosaved).xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View Account2 Account3 Account4 Account5
 Paste Copy Paste & Fill Font Alignment Number Styles Calls Editing
 Clipboard Font Alignment Number Styles Calls Editing
 Conditional Formatting & Table
 Insert Delete Format
 AutoSum
 Sort & Find
 Filter & Select

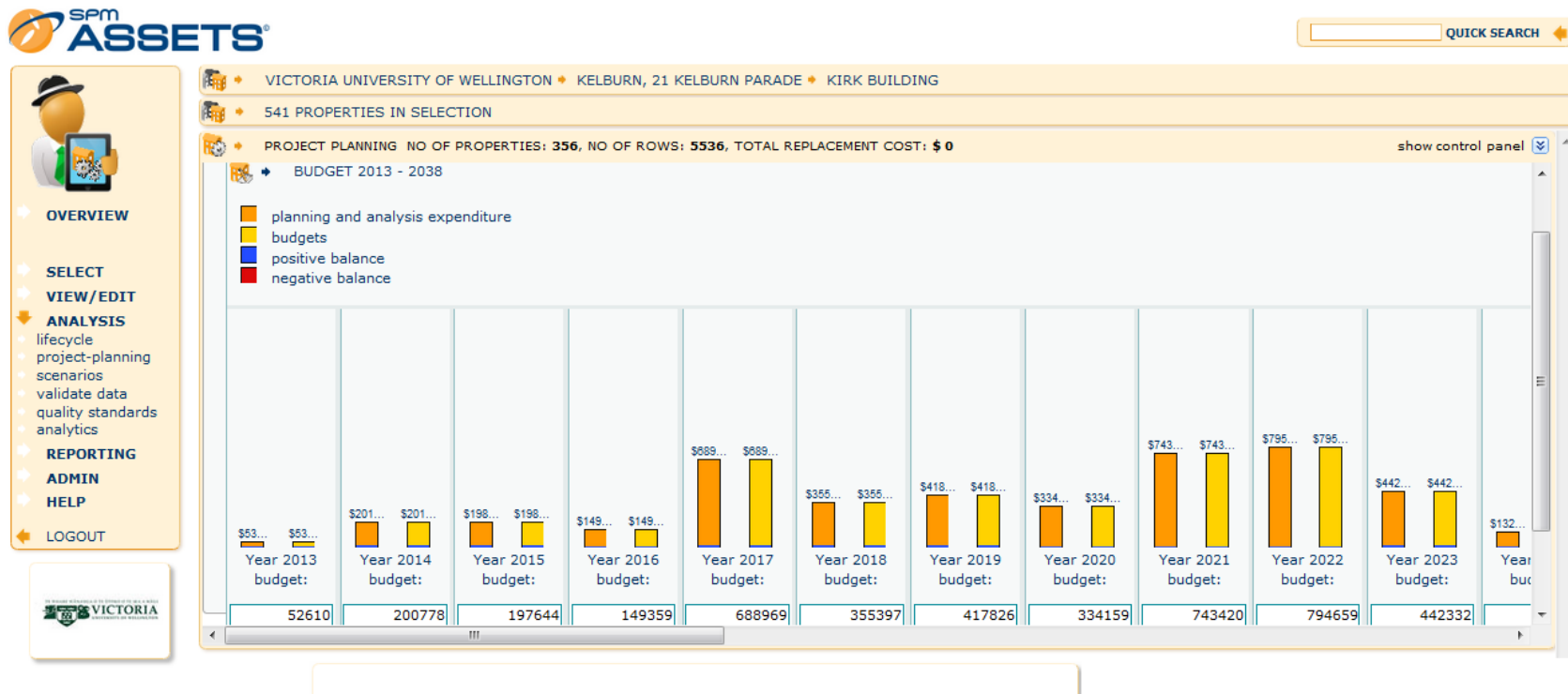
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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA
1					Victoria University of Wellington																						
2					SPM Analysis - Total University including Victoria Properties																						
3					As at November 2012																						
4																											
5					Scenario 3: Projecting to smooth based on Finance advising the maximum annual capex budget affordability less augmentation (major capex) required.																						
6					Summary by Building - CAPEX																						
7																											
8					Building																						
9						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	Total	
10						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
11						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
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54						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
55						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
56						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
57						2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2020	
58						2013																					

SPM Assets Output - Future

- Move away from output into spreadsheet with manual manipulation
- Enhance the factors that influence the renewal profile e.g. criticality, base-lives, unit rates & maintenance regimes
- SPM Assets has budgeting and project tool

Graphical Outputs – Budgeting



Maintaining the Data

- Stringent contractual obligations for main FM Contractor to:
 - maintain “accurate” asset component register and activity details in “real time”
 - Undertake internal data audits
 - Arrange and accommodate 6 monthly independent external data audits
- KPIs to ensure audits are undertaken **and** data accuracy measures
- Requires sophisticated mobile technology to maintain (i.e. ability to search and update asset component data on mobile devices in field)
- Robust review of VUW’s internal Project Management Framework (PMF) Handover Protocol, with requirements of all PMs to furnish asset component data at handover as a key project gate / sign-off required

Learning

- What were the key lessons?
 - Establish client expectations very early on in the process e.g. level of granularity required (and why!)
 - Ensure that all parties know the client's vision e.g. how the data will be used, as this helps inform the methodology/context
 - Establish clear project groups, meeting and reporting regimes from outset
 - Pilot project critical step in the process to ensure everyone was on the same page
 - Data validation – many “lines of defence”
 - Responsibility for amendments needs to be clearly assigned & monitored

- Questions?
- Contact:

Tom Clarke

Manager - Construction Services

Tel: 02 9880 2955

Email: tom.clarke@spmassets.com

www.spmassets.com *simplifying asset management*

OR

Steph Forrest

Associate Director – FM, Victoria University

Tel: +64 27 5636604

Email: steph.forrest@vuw.ac.nz

