

# Cultivating a Water Wise Approach

Laith Wark

March 2013



# Today's speaker

- Laith Wark
- Registered Landscape Architect
- Partner in Verdaus Landscape Architects



# Experience in this climate and context

- Climate influences design of outdoor spaces.
- Sharpened an appreciation for plant life.
- Greenery improves quality of life.
- Even small amounts.



43

CASA|NOVA

more than just furniture

CASA|NOVA





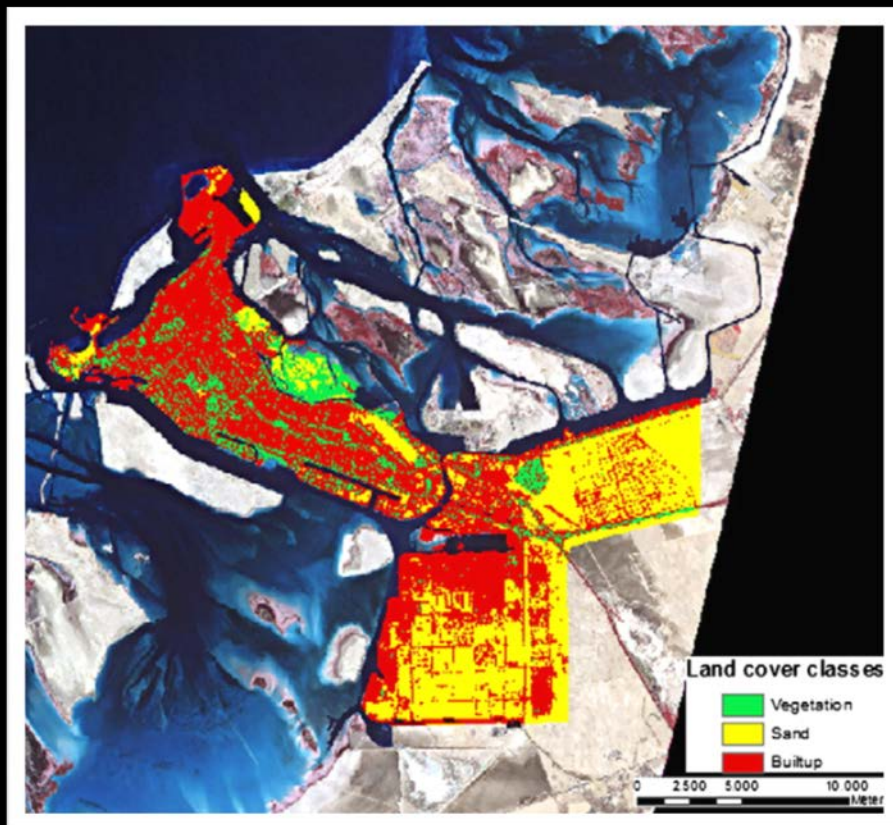
# Trees and planting

- Beauty
- Comfort
- Good for business
- Art of survival – sustainability (UHI)

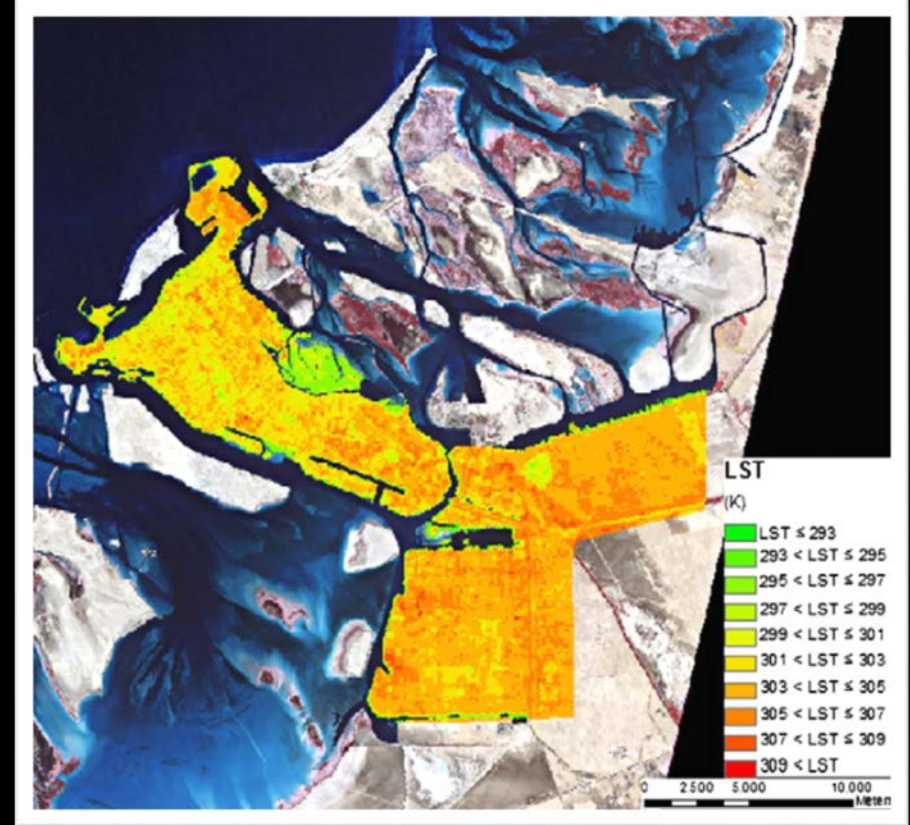
# The “reduce” paradigm

- Trees cool the city.
- Trees need water.
- Water is a precious resource.
- Less trees – less water?
- What is the most sustainable path?

# Urban heat island inverted



Land Cover Classes



Temperature

Lazzarini, M., Marpu, P. R., & Ghedira, H. (2013). Temperature-land cover interactions: The inversion of urban heat island phenomenon in desert city areas. *Remote Sensing of Environment*, 130, 136–152. doi:10.1016/j.rse.2012.11.007





# Recycled water availability

- Lets consider some differences.
- Irrigation using drinking water.
- Irrigation using recycled water.
- A citywide recycled water network.
- Sometimes more than enough.
- (We will always need to use carefully.)





# Surplus

- the largest single input is the effluent (secondary treatment) from the Aweer sewerage treatment plant (STP) located...
- ...currently the STP discharges more than 100,000 m<sup>3</sup> a day into the lagoon  
(Saunders, Al Zahed, & Paterson, 2007)
- Access to data needed.

# Goal: Make use of every drop

- Peaks, troughs, and redundancy.
- Can we reduce wastage?
- Without risking shortages?
- And make good use of every drop?

# How to manage variations?

- Ways to manage variations between supply and demands?
- How to prepare for times of shortage?

# Storage capacity

- Increased storage capacity, one method.
- One (1) day's storage, not enough.
- How to store more?
- Suggestions?



# Soil as water storage

- UAE soils are typically free draining.
- Weak water holding capacity.
- Increase water holding capacity of soil.
- Moisture retaining soil additive (Zeoplant).
- 22 days with no irrigation – mid summer.



# Case Study

- Motor City Uptown
- Motor City Green Community



	<b>MC UPTOWN</b>	<b>MC GREEN COM</b>
<b>ZEOPLANT (TON)</b>	<b>481</b>	<b>567</b>
<b>ZEOPLANT (RATIO)</b>	<b>1</b>	<b>1.18</b>
<b>DAILY WATER VOLUME (M<sup>3</sup>)</b>	<b>5,334</b>	<b>1,266</b>
<b>DAILY WATER VOLUME (RATIO)</b>	<b>1</b>	<b>0.24</b>
<b>IRRIGATION RUN TIME (HRS)</b>	<b>17</b>	<b>4</b>



- Maxicom² Central
- Communication Status
- Event Log
- MC\_Green\_Community

Log Schedule ET Data Event Map

Show For:  
From: 3/11/2013 5:31:02 AM  
To: 3/11/2013 5:31:03 AM

Change Time Range

Show As:  
 Flow Graph  
Zoom In Zoom Out

Flow List  
 Runtime Roster

Use What:  
 Entire Site  
 FLO WATCH Zone:  
FM#1

Show What:  
 Projected Data  
Recalculate  
 Actual Log Data



Daily View

Idle



- Maxicom² Central
- Communication Status
- Event Log
- MC-Uptwon\_Site Wide



Log Schedule ET Data Event Map

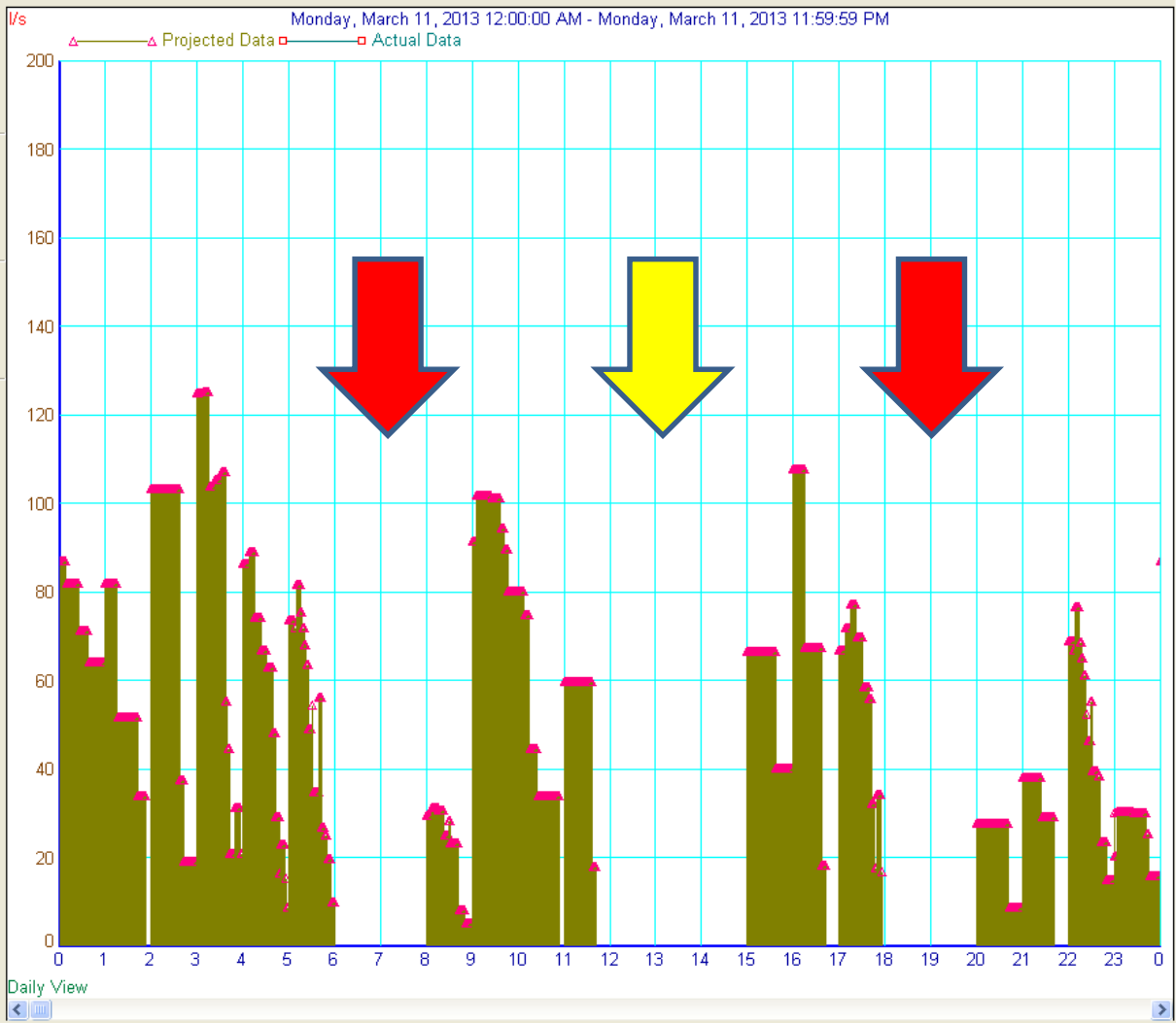
Show For:  
From: 3/11/2013 7:31:35 AM  
To: 3/11/2013 7:31:36 AM

Change Time Range...

Show As:  
 Flow Graph  
Zoom In Zoom Out  
 Flow List  
 Runtime Booster

Use What:  
 Entire Site  
 FLO WATCH Zone:

Show What:  
 Projected Data  
Recalculate  
 Actual Log Data



Daily View



Idle

# Indications of storage buffering

- Irrigation water supply was interrupted for 22 days in August. Plants did not reach permanent wilting point.
- “More homogenous growth, more control, easier to avoid under watering and easier to avoid over watering.”

# Other benefits

- Run times.
- Electrical power consumption.
- Labour and supervision.
- 40% saving of lawn fertiliser on Green Community compared with Uptown.
- Downtime of recreational open space.
- Root growth patterns.

# Other benefits continued...

- Lower fly populations.
- Less water seepage issues.

# Return on investment

- Return on investment between 2-3 years.  
Saving on water, electricity, fertiliser, labour.





# In conclusion

- Trees and plants for sustainability.
- Is less more sustainable.
- Citywide recycled water network.
- Peaks and troughs.
- Increase storage capacity to increase efficiency.

Any questions?



# Shukran. Thank you.

- Laith Wark – Verdaus Landscape Architects
- + 971 50 4254757
- [laith@verdaus.com](mailto:laith@verdaus.com)