



The Secretary, Mr. Peter Stephens, and Members

Joint Parliamentary Committee

The National Broad Band Network

Letter of Introduction

Dear Mr. Secretary and Members,

Networked Infrastructure National Architecture Pty Ltd (NINA) was formed as single focus research and development, company. The single focus is: To create a new operating system for the deployment of networked utility services in residential and urban environments.

We have now substantially completed our work to the point where we have applied for both Australian and International Patents for our work. The name of our invention and solution is the NINA Access Pathway™ our motto is *“Foundations for life and pathways for the future”*.

This solution is directly relevant to the terms of reference (T o R) of the Committee as it:

1. Will establishes an economically, technically, environmentally and socially superior means to construct the NBN network (T o R 1.)
2. Will meet or exceed all of the coverage objectives of that project. (T o R 1 i, ii.)
3. Will make it easier to meet or exceed all of the technological, social and Stakeholder Charter objectives of the NBN and substantially eliminate technology risk, operational risk, and financial risk from the project (T o R 3, 4, 5, 6.)
4. Will generate massive economies of scope by simultaneously solving major urban infrastructure needs in the fields of water, electricity, gas, pavement upgrades, permit the introduction of electric cars on a scale not previously considered feasible in the medium terms, save many lives, make our streets, communities and neighborhoods more beautiful and sustainable. (T o R 7)



The works undertaken by NINA have addressed all aspects of the NBN challenge and necessitated extensive research into the physical environment of our urban streetscapes. Over 100 “blocks” have been measured across Australia (urban, remote, very remote) to determine area, perimeter, number of building lots and building types. This statistical analysis has allowed to build a clear picture of the national average block, how many there are, their area and characteristics.

I have over 20 years of experience in engineering, telecommunications, finance and research and referenced hundreds of sources to build what I know to be a fact based and logical analysis of the economic opportunity the NINA Access Pathway represents.

I believe that this fact based approach has allowed us to more realistically assess the scale, challenge and characteristics of a national roll-out.

Using this analysis the NINA design has been fully assessed and modeled both from a regulatory economics perspective, as a commercial entity and as a major project. The results are stunning and can be shown to represent the largest micro-economic reform Australia has ever experience with massive positive ramifications for national productivity, inflation, GDP growth, government debt, environmental sustainability.

Fully implemented nationally the NINA access pathway would push Australia to a world leading position in terms of advanced economic growth, environmental sustainability, water security, greenhouse gas emissions.

It would achieve the above while creating a return to investors (whether Government Federal/State/Local) and allow a complete reform of local government finances such that they could transform the nature of our communities and restore Australian manufacturing.

I urge all members to look carefully at the NINA Access Pathway and seek leave to make a more formal submission and presentation admissible as a submission to the Productivity Commission.

The attached PowerPoint presentation outlines the nature of the NINA solution and presented as a an introduction. I look forward to briefing you all more directly and urge your colleagues to consider this approach as a matter in the National Interest.

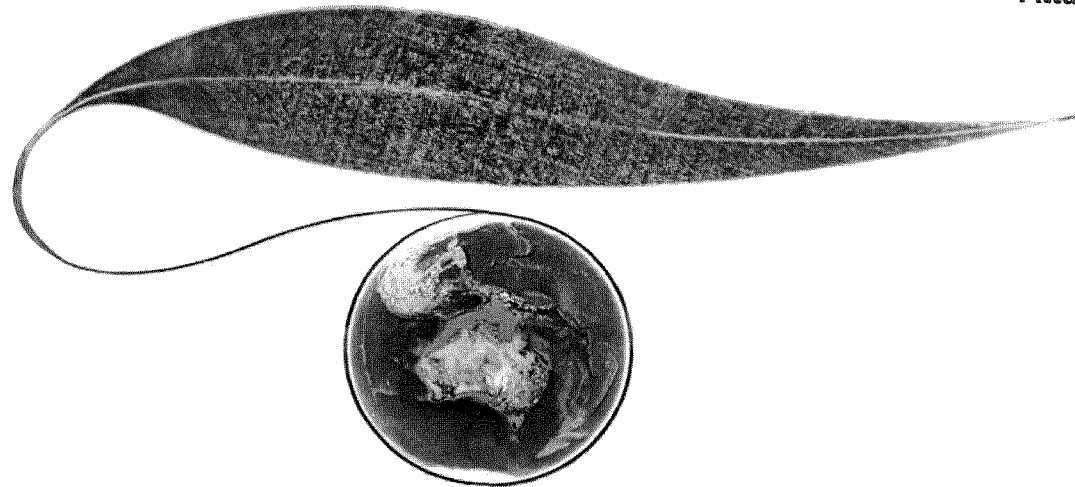
Yours Sincerely,



Guy Dixon
Founder and Inventor
Networked Infrastructure National Architecture Pty Ltd

Networked Infrastructure National Architecture (N.I.N.A.) Pty Ltd

Attachment: Submission No. 18



TM

Foundations for Life and Pathways for the Future
Author: Guy Dixon,
Founder and Inventor

9/22/2011

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Confidence



Australia has some big issues to deal with.....

- An imbalanced economy: mining vs. the rest
- Declining Productivity
- Poor infrastructure
- Inflationary pressures – Utilities a big component
- Environmental concerns – CO₂ emissions, water security, pollution
- Aging population
- Housing shortages



Imagine if we could.....

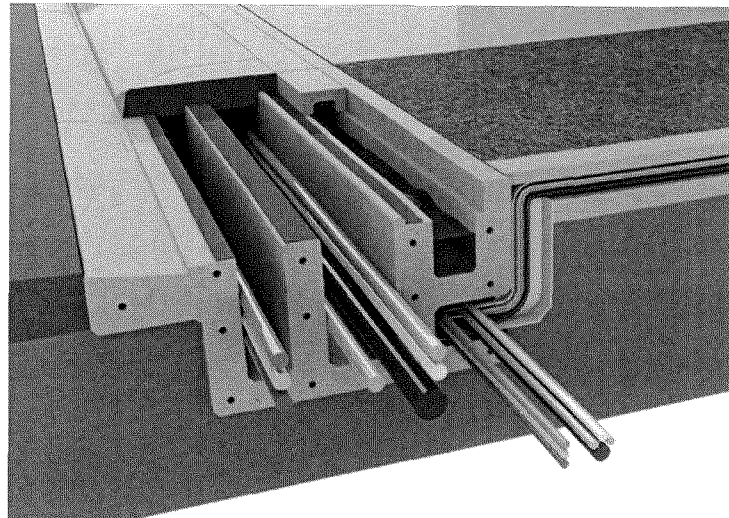
- Rebalance our economy to make use of the mining boom to support new industry and innovation
- Lead the world in productivity growth
- Have the most efficient networked infrastructure in the world
- Remove the inflationary contribution from utilities
- Eradicate our growing dependence on imported oil
- Make our cities more: sustainable, resilient, beautiful, capable, cleaner and happier places to live
- Save lives and build a greater future
- Build a great global industry



NINA has developed a very powerful and effective solution to urban infrastructure! It is based upon the following concept:

By integrating curbs, gutters, utility ducts, water isolation channels and pavements you benefit from economies of scope and scale and solve a lot of big problems. Such as:

1. Water security
2. Energy Efficiency
3. Productivity
4. Competition
5. Safety
6. Health
7. CO2 Emissions

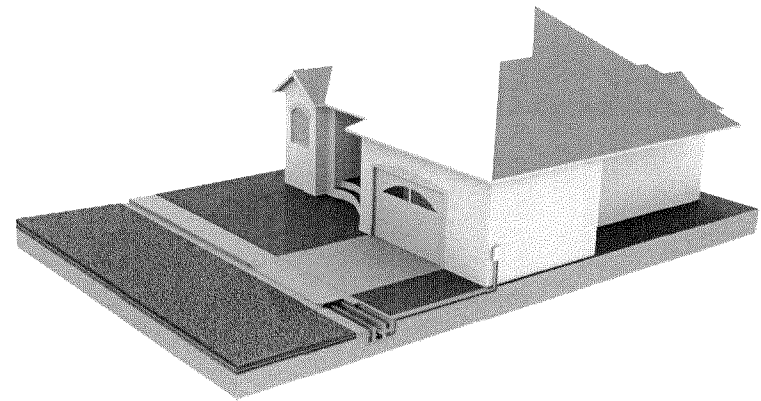
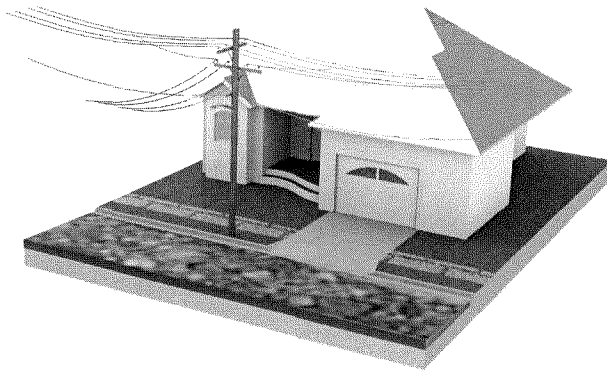


These are the objectives of the NINA Access Pathway...by going from

This

to

This



- ◆ Power poles
- ◆ Broken footpaths
- ◆ High distribution charges
- ◆ Monopolies

- ✓ No poles
- ✓ Beautiful streets
- ✓ Electric cars
- ✓ Competitive broadband
- ✓ Competitive distribution
- ✓ Innovative infrastructure

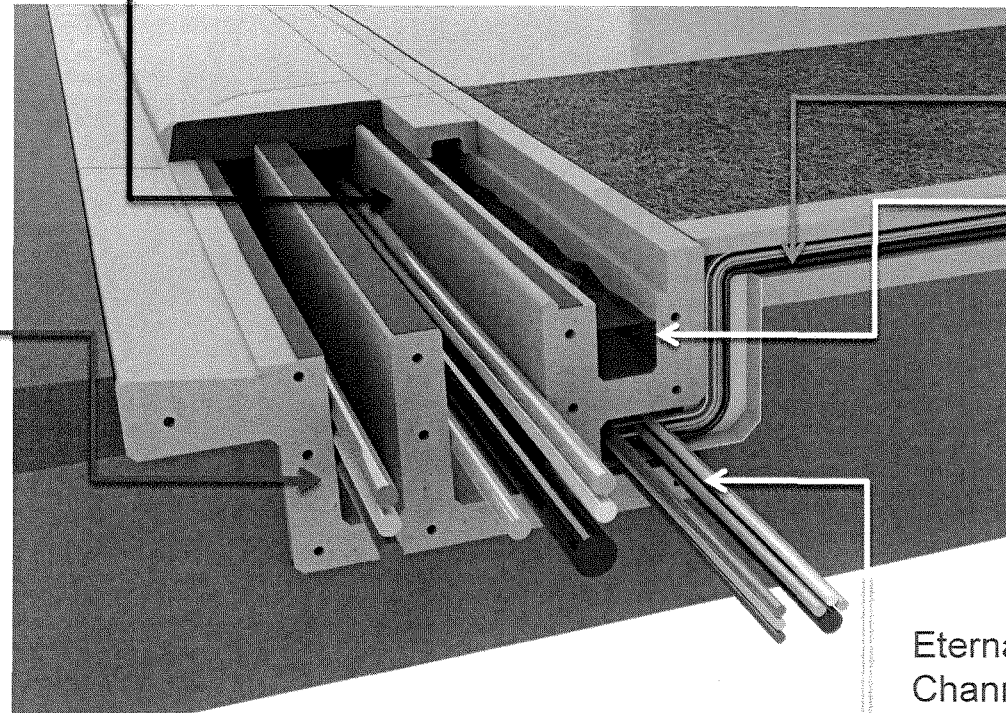
- ✓ Lower emissions
- ✓ Clean storm water
- ✓ Safer streets
- ✓ Better lighting
- ✓ Better efficiency
- ✓ Better economy



The NINA Access Pathway integrates the functionality of kerbs, gutters, ducts, poles into a multi-utility access network...

Optical cables
Pay TV, Gas, Water,
Telecom

Power cables 11kv,
Electric car power 480V,
220-240 LV distribution
Safe isolated channel
Cables in conduit



Adjacent feeder
channel

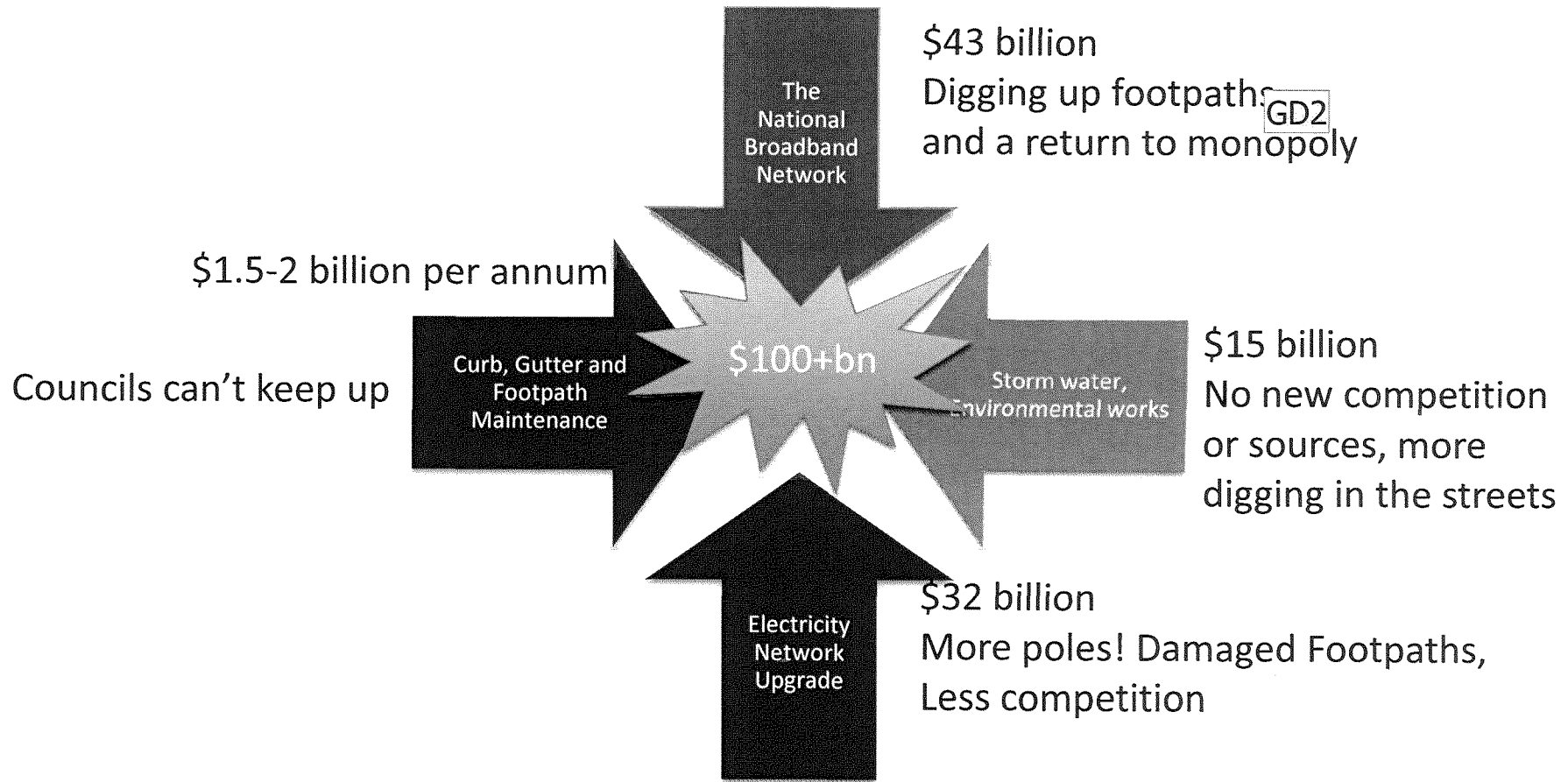
Storm water
Isolation and
Capture channel
No contact with
Road surface

Eternal feed service
Channel, does not
need digging to access
Feeds to point adjacent
to houses

- ✓No more digging
- ✓No technology risk
- ✓Low marginal cost for new service installation
- ✓Creates a competitive access route for multiple infrastructure providers



Current infrastructure projects are on a collision course!
 A lot of money is being placed at risk!
 Australia needs to be sure its scarce capital is working to increase productivity by lowering distribution costs!
 But the opposite is happening!
 Our utility services are becoming LESS efficient and costs are RISING!



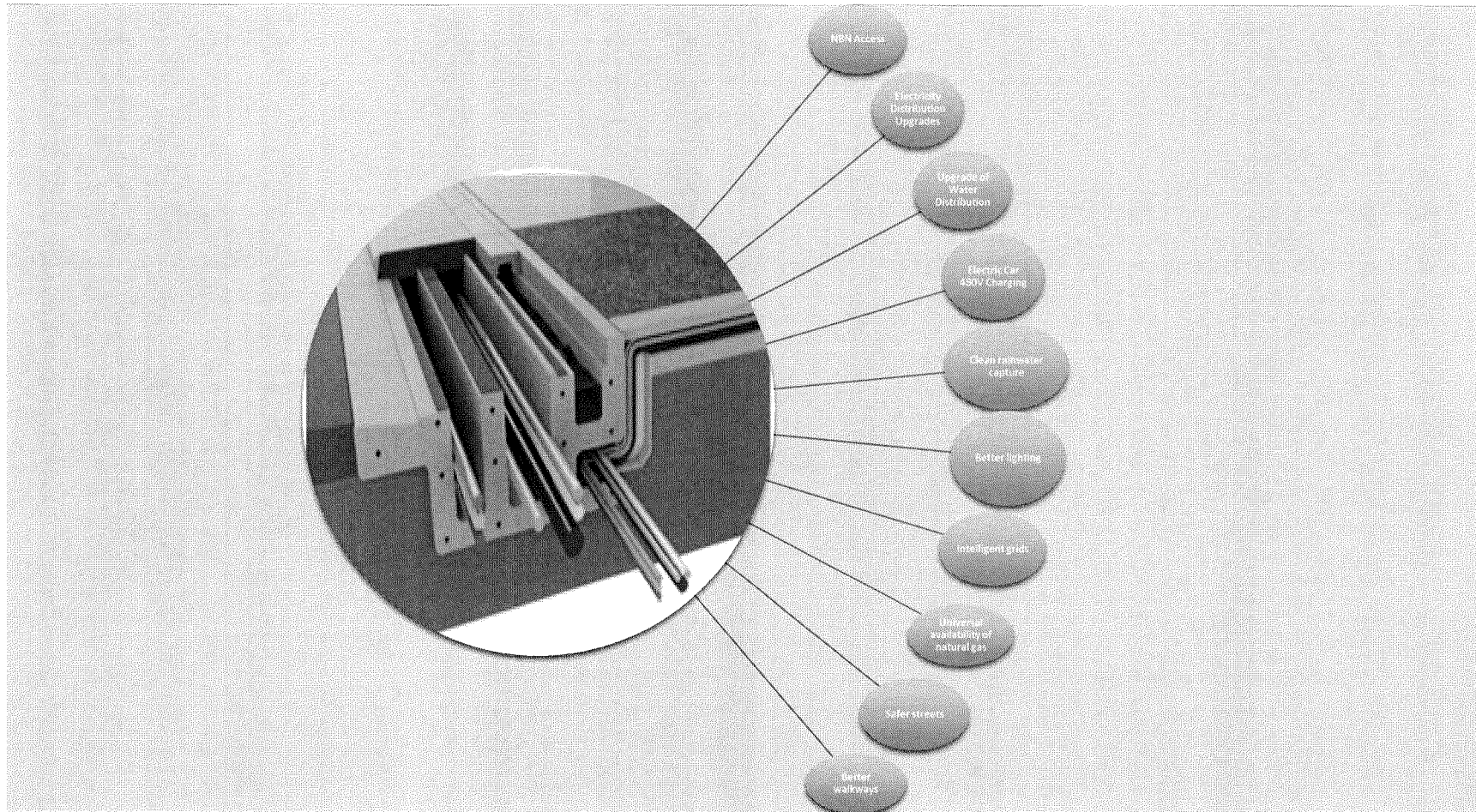
Slide 7

GD2

Estimate of costs to underground power in Victoria in response to Bush fire Royal Commission

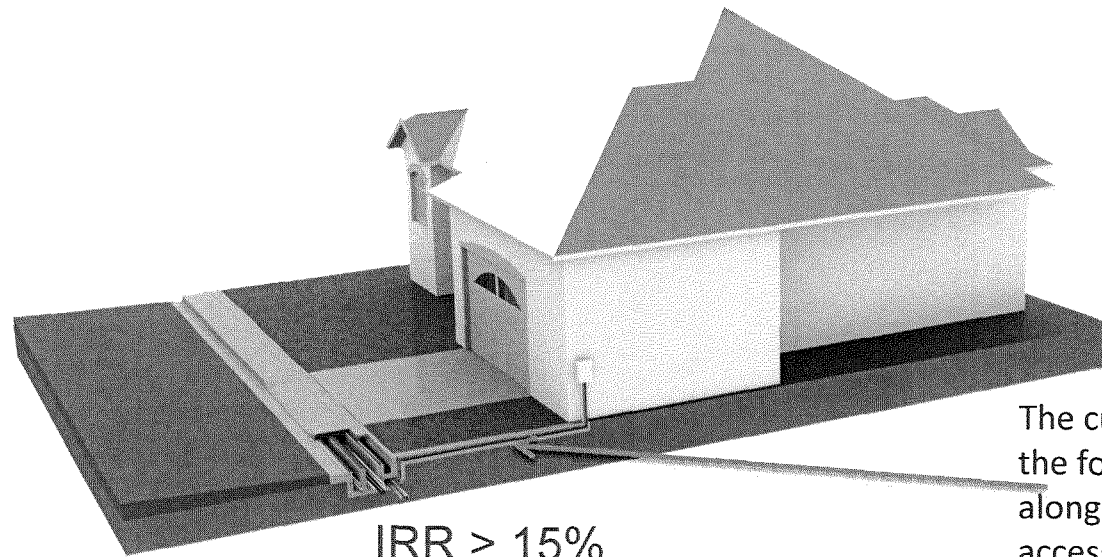
Guy Dixon, 1/11/2010

Through as simple solution we solve a lot of problems (physical and economic) and meet a lot of needs, social and environmental



Its simple, its low cost, its profitable, it can be built with public, private or combined funding it transforms the kerb, gutter and pavement into a powerful distribution asset and it opens up a whole world of opportunity!

NINA BRINGS THE CUSTOMER TO THE CURB!



The customer link traverses the footpath and then runs along the pathway to access/egress nodes

IRR > 15%

NPV \$44 BN

Terminal Value - > \$200 billion

EBITDA Yr12 ~ \$23 billion

(using NBN's 13.6x P/E)



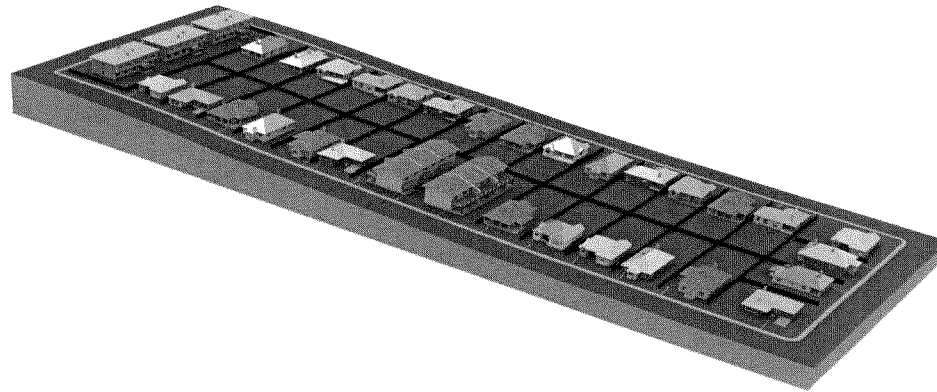
90+% of Australians live in blocks! Block dimensions define the economics!



There are approximately 166,000 blocks in urban and regional Australia
Each block contains on average 50 premises comprised of single dwellings (SDU), semis, multiple dwelling units (MDU). The average perimeter is approximately 780 meters, long and encloses an area of approximately 30,000 square meters.



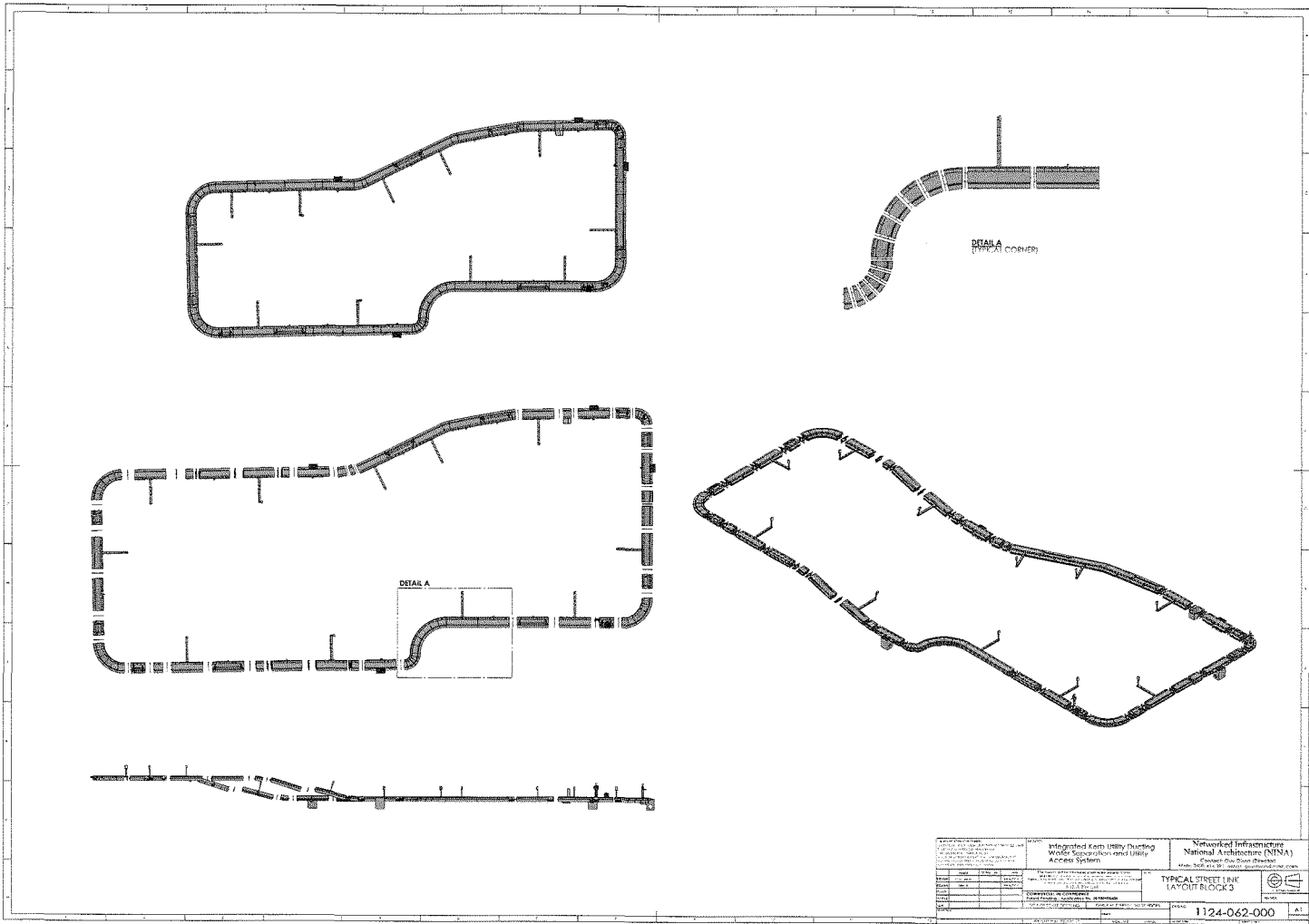
So we designed a utility distribution system based upon the national average block “framed” by the NINA Access Pathway



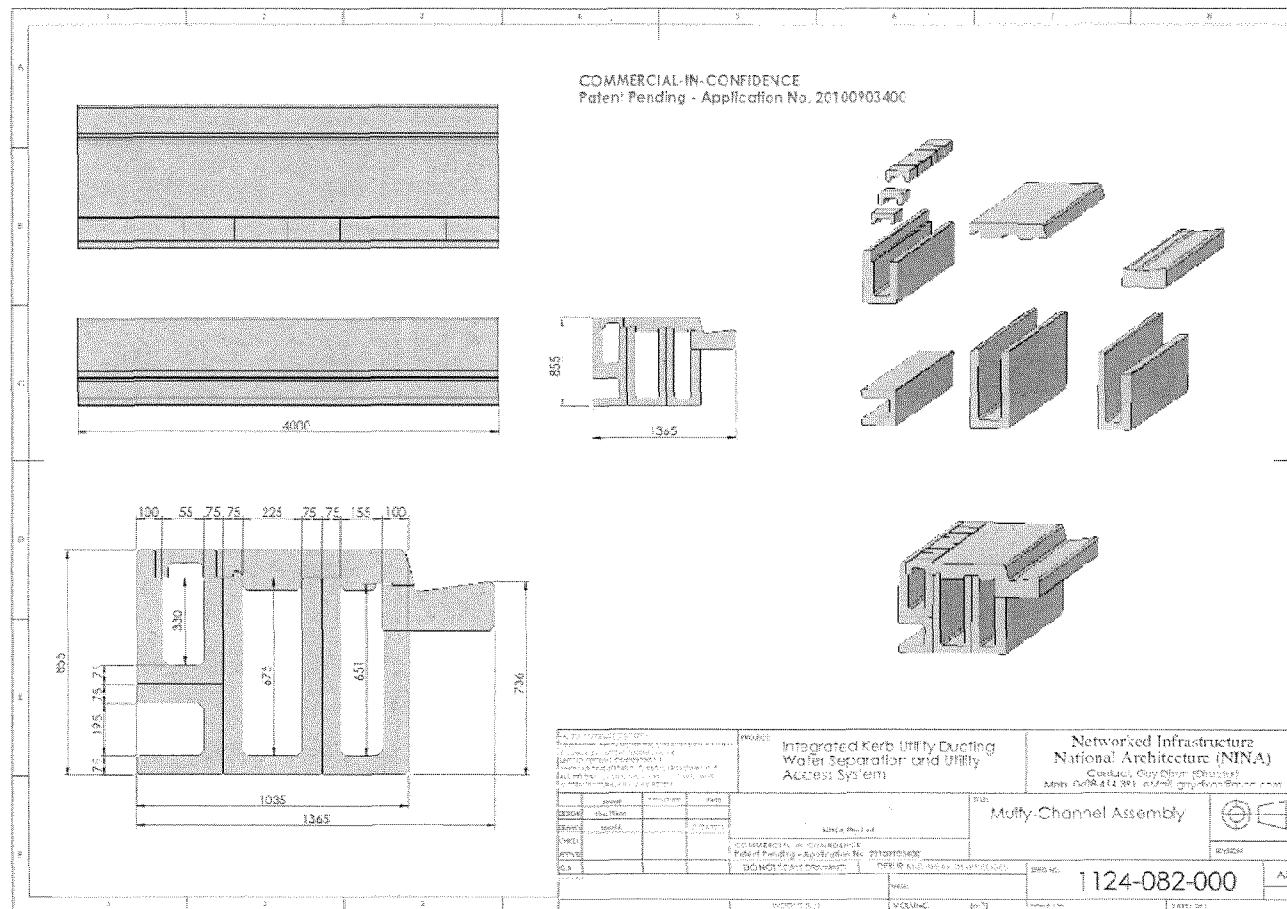
We have surveyed over 100 urban blocks in all parts of the country Cities, outer urban, regional and remote, this is what the average looks like!



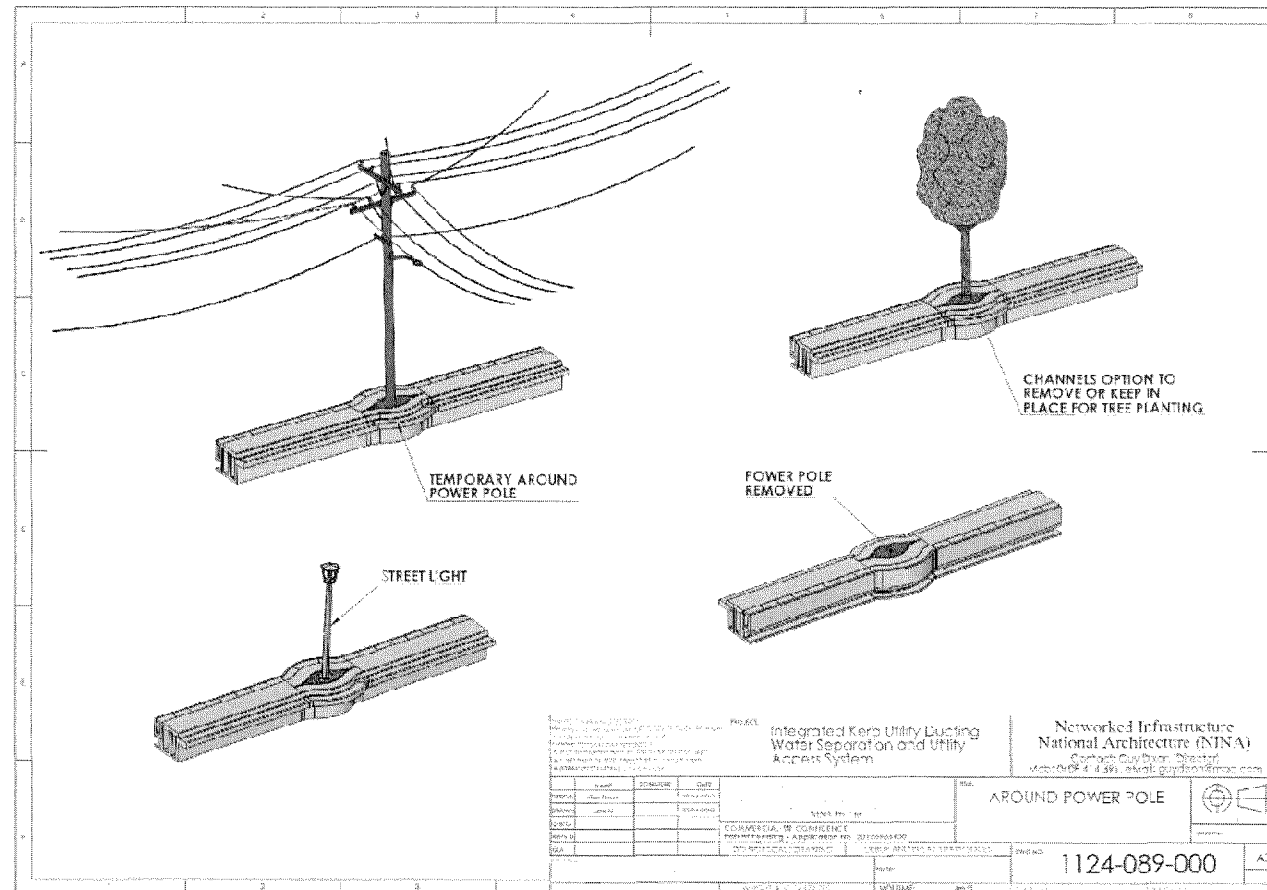
The NINA Access pathway is a modular “Lego set” of elements which are adaptable to all geographies.



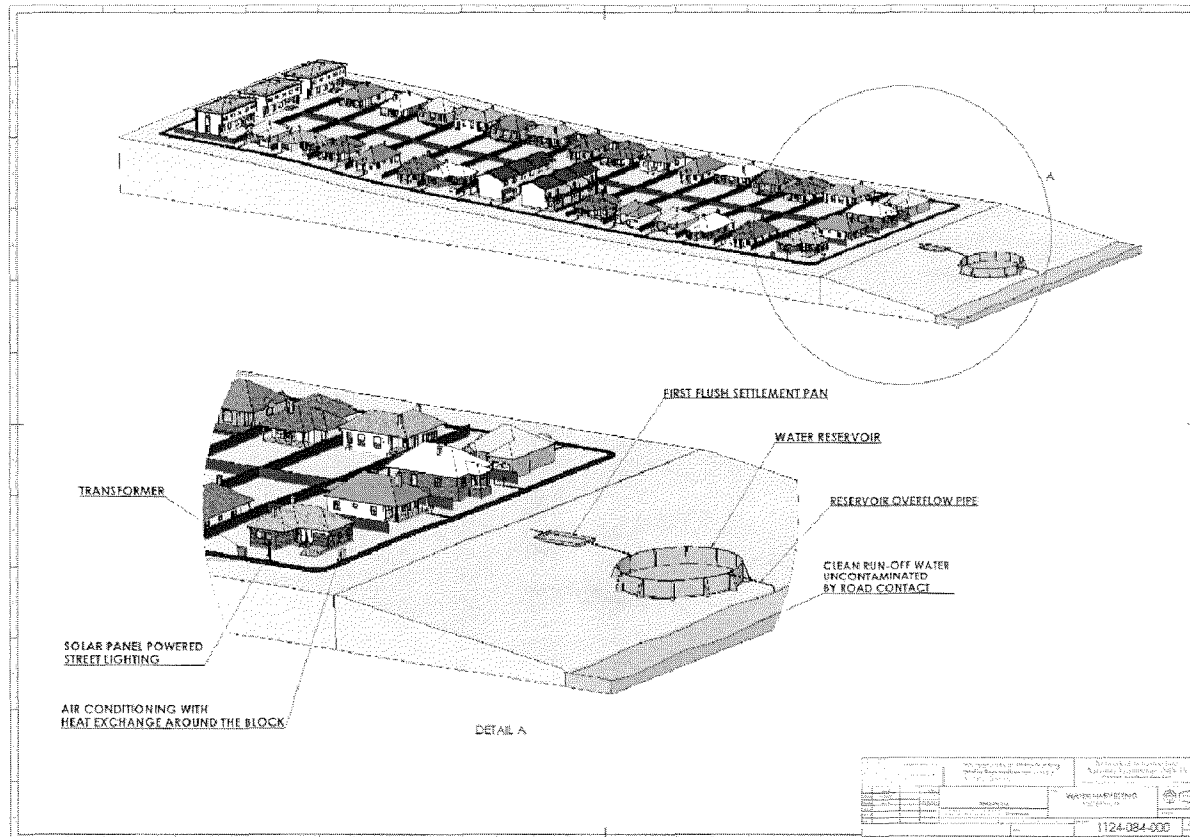
The primary base channel represents 71% of the precast concrete in an average block framed by the NINA Access Pathway™. It is a composite of channel beams designed for high volume manufacture different lid shapes mean we can install driveway and wheelchair access points as and when required. This flexibility is unique to NINA!



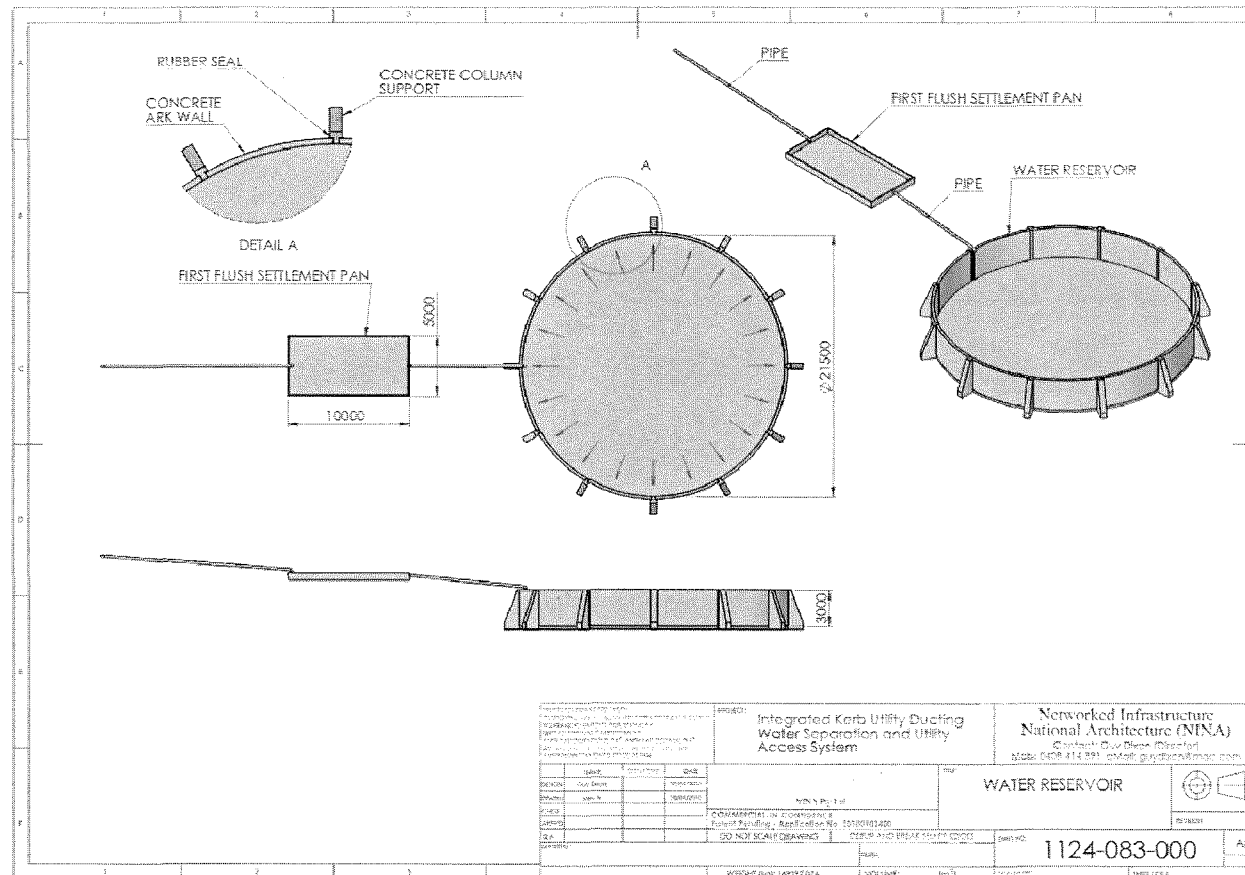
The base channel can be split to stream past power poles trees etc this permits us to install the network without loss of service to residents and to cut-over when power services are established. The split section can be retained or replaced with a standard section depending upon circumstances. This is a unique feature of the NINA Access Pathway™



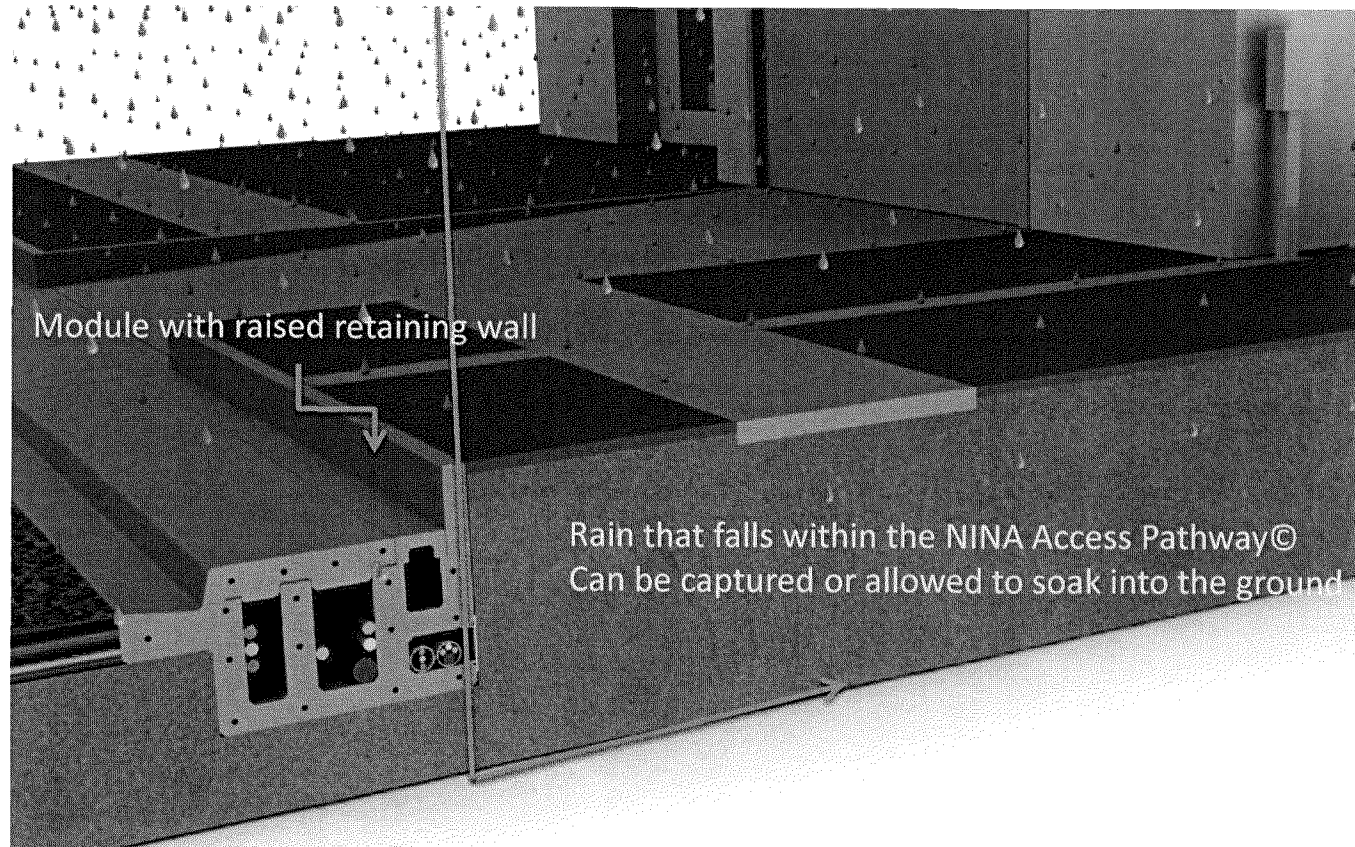
The NINA Access Pathway makes things environmentally, economically and socially possible. It would revolutionize the management and quality of the the urban environment. Water restrictions cost of the order of \$1 billion per year (Productivity Commission 2008). The quantity of clean rainwater falling on residential blocks each year is 4.2 billion cubic metes with a clean/on site usage value \$11.6 billion! Approximately 35% of the area is rooftops so a potential water resource of 1.5 billion cubic meters per annum worth \$4 billion without significant cleaning.



Currently this water enters the storm water system where it is contaminated through contact with road surfaces and subsequent chemical contamination (heavy metals) and polluted ground water (mostly sewerage overflows) limit the use of this water. The NINA Access Pathway allows ~35% of urban rainwater to be isolated from contact any substantive contamination and up to 90% isolated from road surfaces and redirected into storage where it can be purified or directed into the environment as clean water!



Keeping rainwater local is good for the environment, the community and the economy! It saves money on building dams and water distribution..



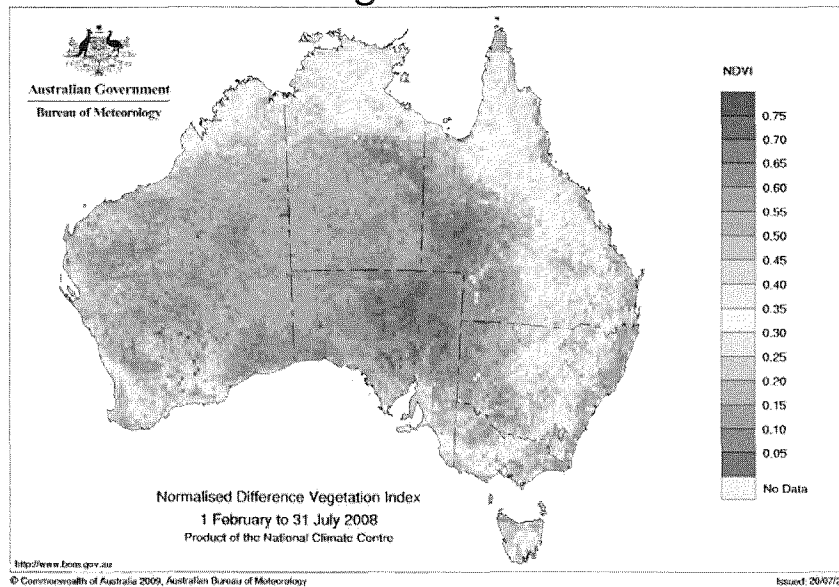
Importantly it allows for greater environmental flows from dams.

What a difference water makes!

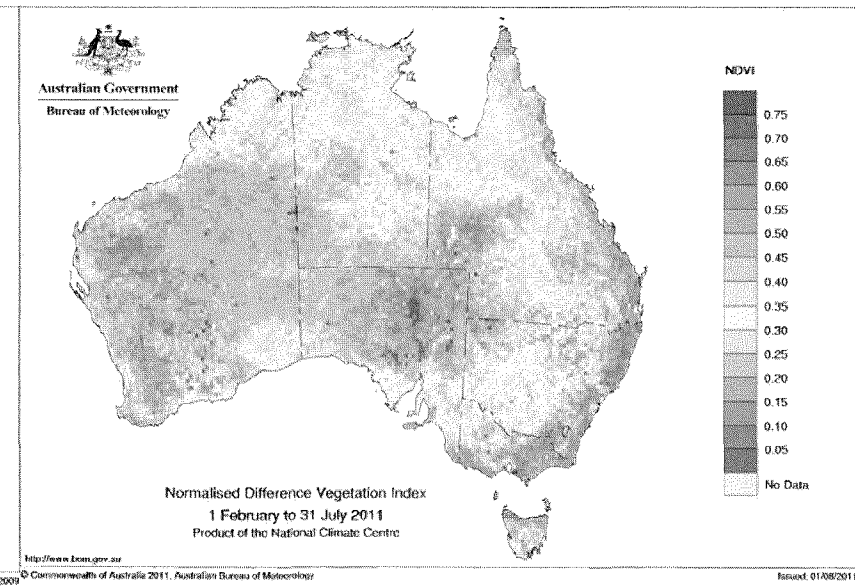
You can see the difference!

More water=Increased vegetation=reduced atmospheric CO₂

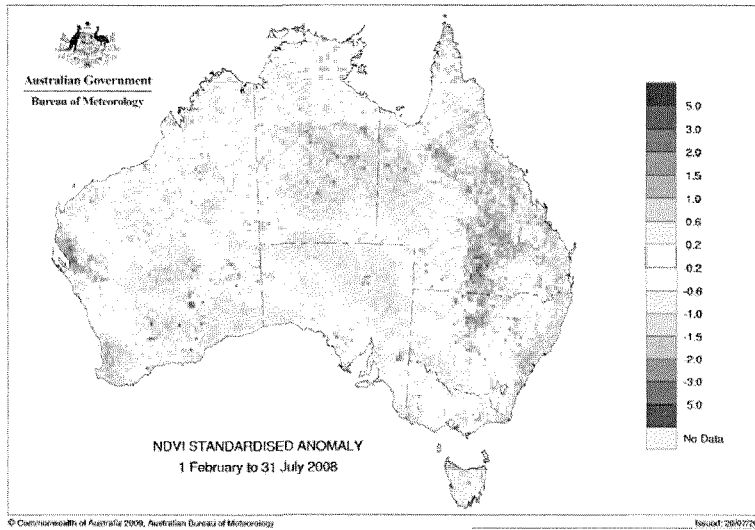
Australia's vegetation in 2008



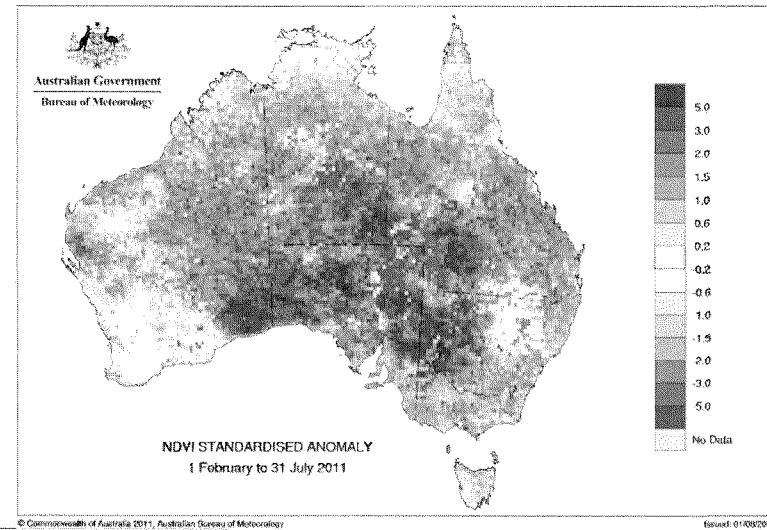
Australia's vegetation cover now!



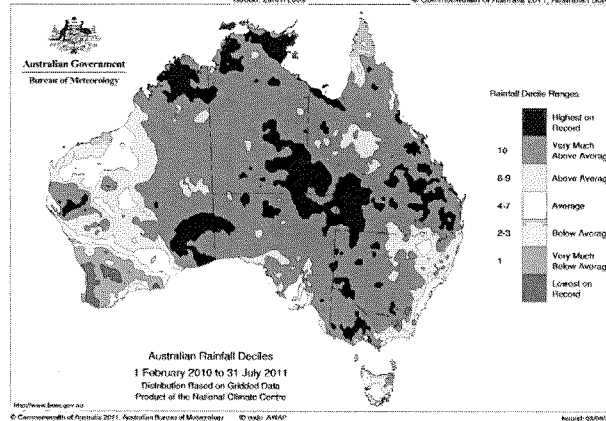
Australia has NEVER been observed to be Greener



Vegetation anomaly 2008



Vegetation anomaly now!



Its all due to water! The correlation is perfect!



NINA has estimated that 7.5 billion metric tons of CO₂ has been removed from the atmosphere by the breaking of the drought, the value of keeping water in the natural environment is now tangible and should be measured!

- This is equivalent to approximately 14 years of Australian anthropogenic emissions
- As water is demonstrably the key to cleaning the atmosphere the NINA Pathway which supports increased natural environmental flows by reducing the demand of cities on natural sources should earn carbon credits
- It is good for the environment and will have flow on positive effects for agriculture.
- NINA should be a part of an overarching “healthy environment” plan delivering cleaner air, friendlier streetscapes, plentiful water, more trees and better foundations for life in Australia!
- It can do this whilst improving productivity, lowering inflation and creating economic growth opportunities that improve our quality of life.
- NINA’s high investment returns are also a powerful tool to manage troughs in the economic cycles



Water is a big issue and not being addressed NINA changes the game in water!

Some Comments from the National Competition Commission:

“An important result from current strategic long-term planning is that, for a number of major cities, further significant investments will be needed over the next 5–25 years to meet growth in demand for water as a result of population and economic growth.”

Finding 11.4

The Commission welcomes steps in some jurisdictions to introduce effective third-party access regimes as consistent with the efficiency and security objectives of the NWI. The Commission encourages other jurisdictions to follow suit, taking into account the National Competition Council’s views on the design of such regimes.

Recommendation 11.5

“The Commission welcomes steps in some jurisdictions to introduce effective third-party access regimes as consistent with the efficiency and security objectives of the NWI. The Commission encourages other jurisdictions to follow suit, taking into account the National Competition Council’s views on the design of such regimes.”

Finding 11.17



NINA provides a new means of collecting and using storm water which address key aspects of the NWI.

Storm water infrastructure in cities has traditionally been designed primarily to prevent flooding of property, in the past we did not think seriously of water scarcity!

There is growing interest in storm water harvesting as a potential source of urban water supply. This growing interest has been based on the rationale that urban areas produce plentiful quantities of storm water close to the point of consumption, and that beneficial use of storm water could mitigate negative environmental impacts associated with its discharge to waterways.

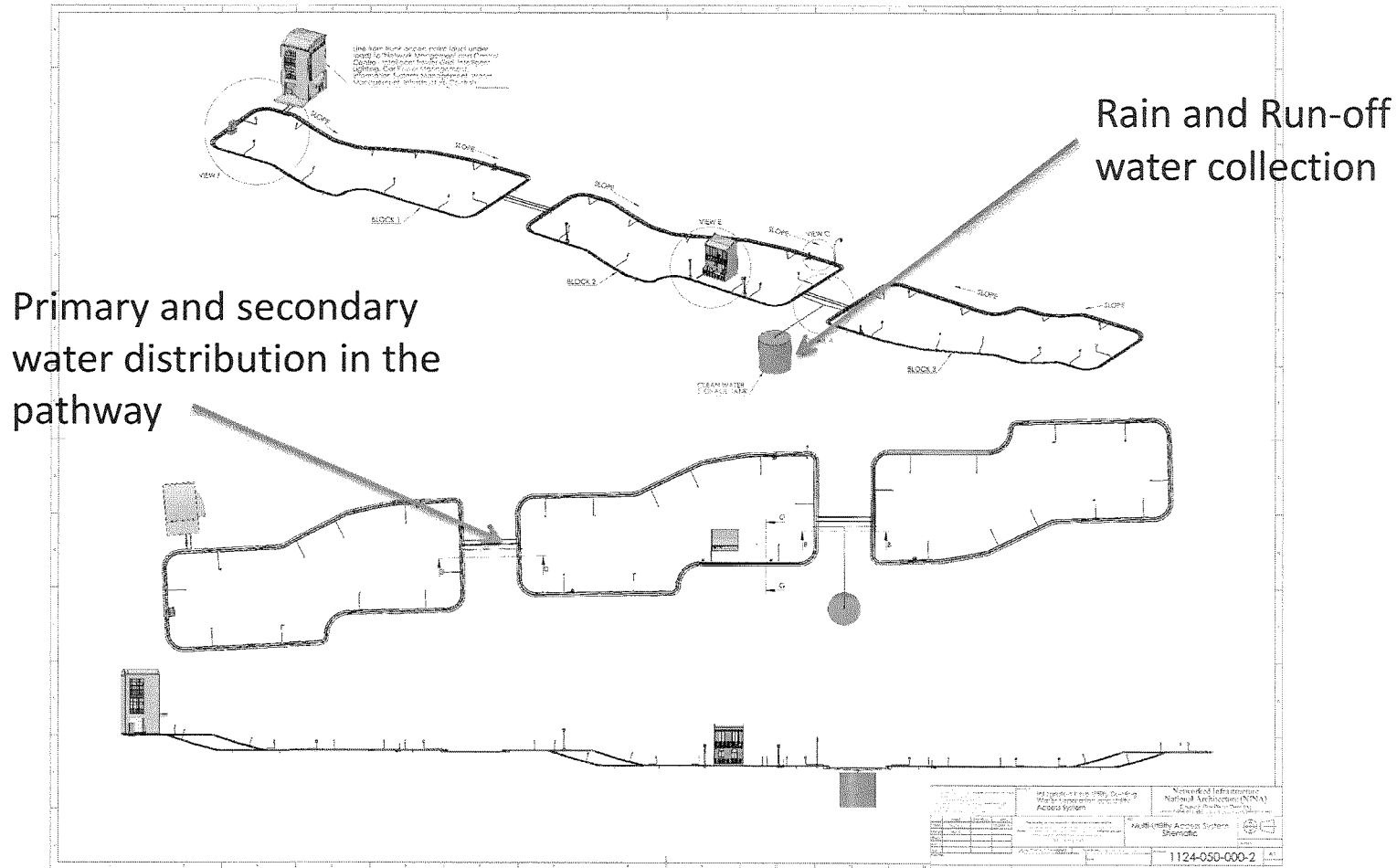
Urban environments contaminate water the most serious contamination is from heavy metals which can not easily be removed, sewerage overflow can also introduce antibiotics and hormones into the environment. NINA creates a new water management infrastructure that protects rainwater from contamination from sewers and roads. This makes it safer whether stored in artificial or natural storage sites (lakes, local rivers, creeks and streams) or tanks.

“Urban lakes and wetlands and managed aquifer recharge provide possible approaches to manage the storage and treatment of storm water. The increase in urban lakes in new residential developments also illustrates that storm water can have a range of beneficial uses, including amenity and recreational values, in addition to its consumptive use value.”

National Water Commission 2009, Australian Water Reform 2009: Second biennial assessment of progress in implementation of the National Water Initiative, NWC, Canberra



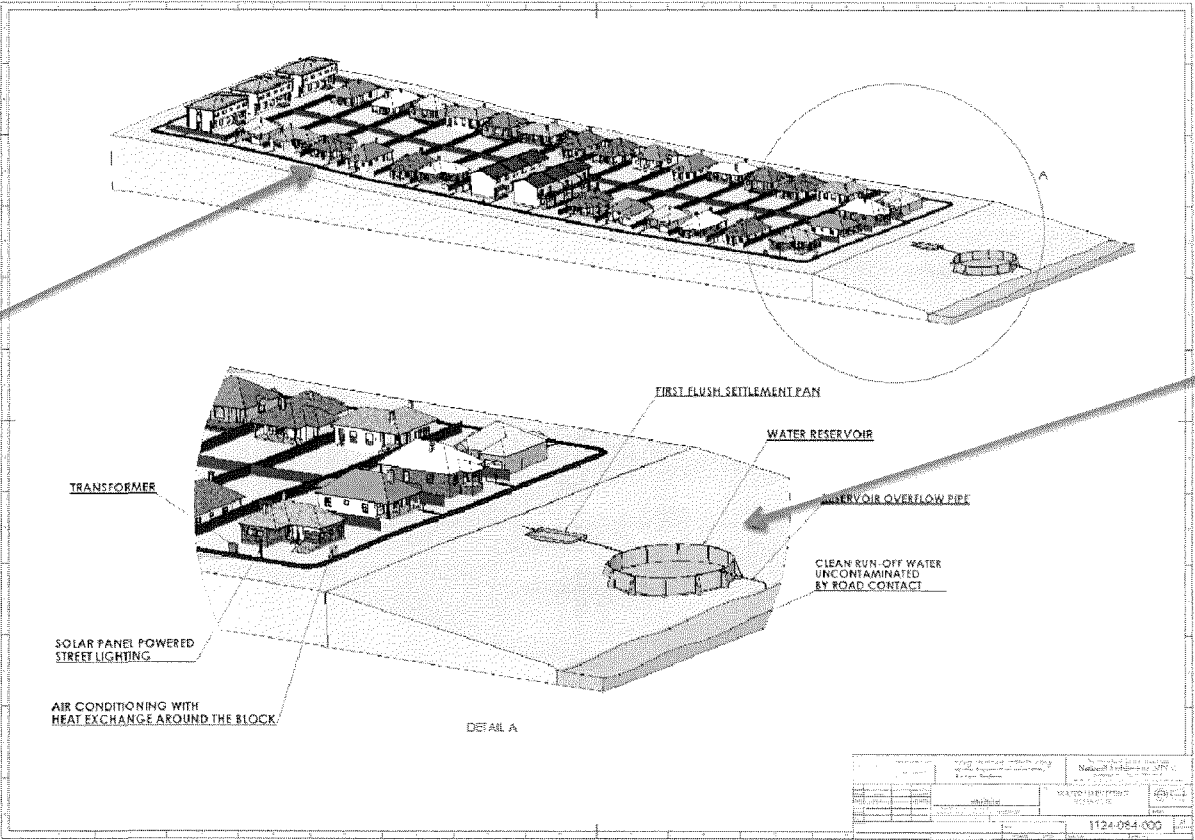
NINA will provide a new “last mile” water distribution system including reticulation of storm or recycled water: this will save billions! Think irrigated cities!



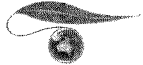
The NINA Access Pathway opens up water sourced in the urban environment as a competitive source. It does this by keeping it clean and capturing it above the established water networks.

This is consistent with the current regulatory intent as expressed in the NWI and Australian Water Reform 2009.

NINA can also be used as part of the required upgrade to water distribution systems



Working with the community tanks with capacity for 3 months of average block use can be located



NINA will bring market forces to water distribution by introducing new sources and new distribution paths. This is consistent with NWC recommendations

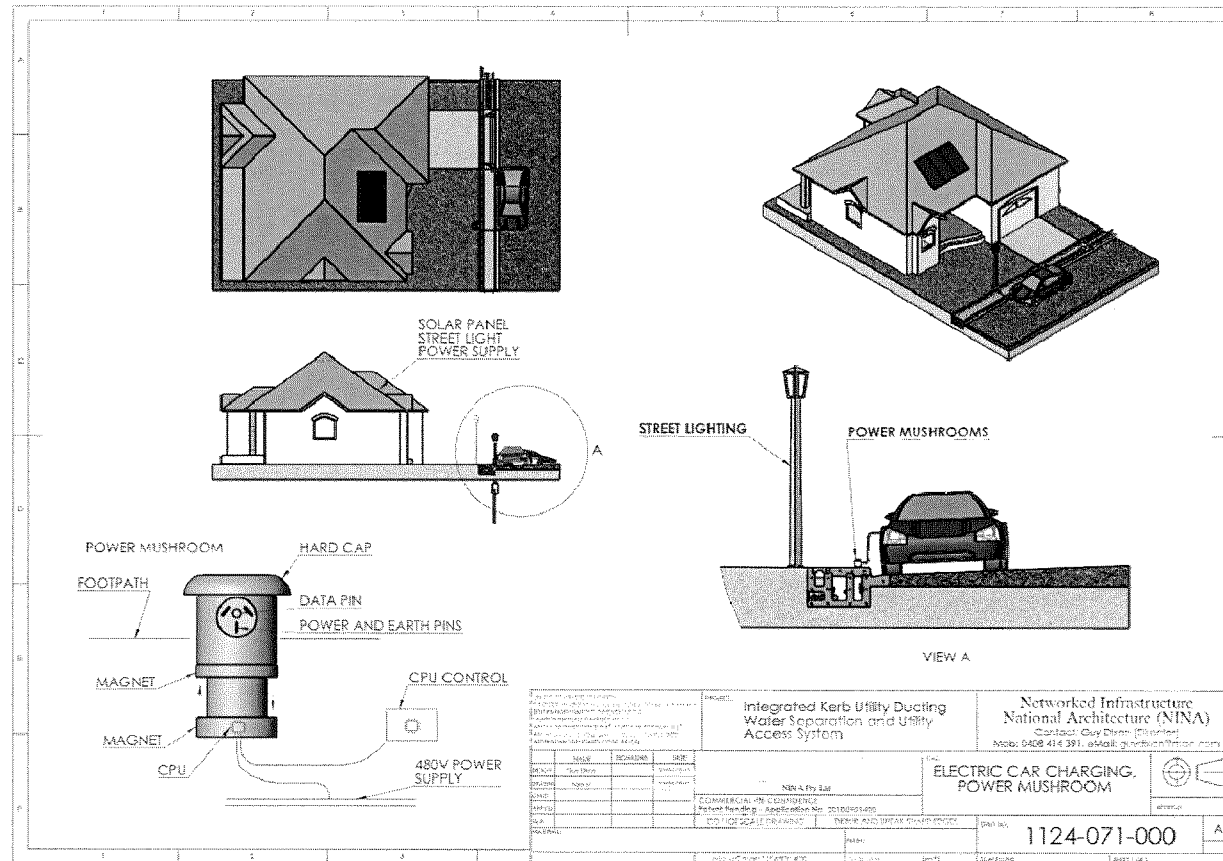
“Markets for the resource: market-based options that are focused on establishing competitive markets for the exchange of water and wastewater. These market-based arrangements could include water trading (including intra-urban trading and rural–urban trading), water offset schemes, competitive sourcing of supply capacity, and wholesale markets for water and wastewater.”

“Markets for service provision to end users: market-based options that are designed to introduce competitive markets and/or contestable arrangements for the supply of water and wastewater services to end users. This could incorporate a range of options, including:–competition within the market, allowing consumers to choose between a range of competing providers for the supply of a good or service–competition for the market, allowing firms to compete for the right to provide water and wastewater services to customers in a defined geographical area.”

Source: National Water Commission 2009, Australian Water Reform 2009: Second biennial assessment of progress in implementation of the National Water Initiative, NWC, Canberra Frontier Economics (2008)



The NINA Access Pathway is also an “enabling platform” for many new services and industries such as: electric cars, solar street lighting, wireless services, block based air conditioning, competitive data, alternative electricity, gases (natural and hydrogen) and many more networked utility services.



The world needs safer more secure networked services platforms! The NINA Access Pathway is earthquake, cyclone, flood, tsunami, tornado and fire proof. Environmental uncertainty calls for increased survivability and resilience. Remember..

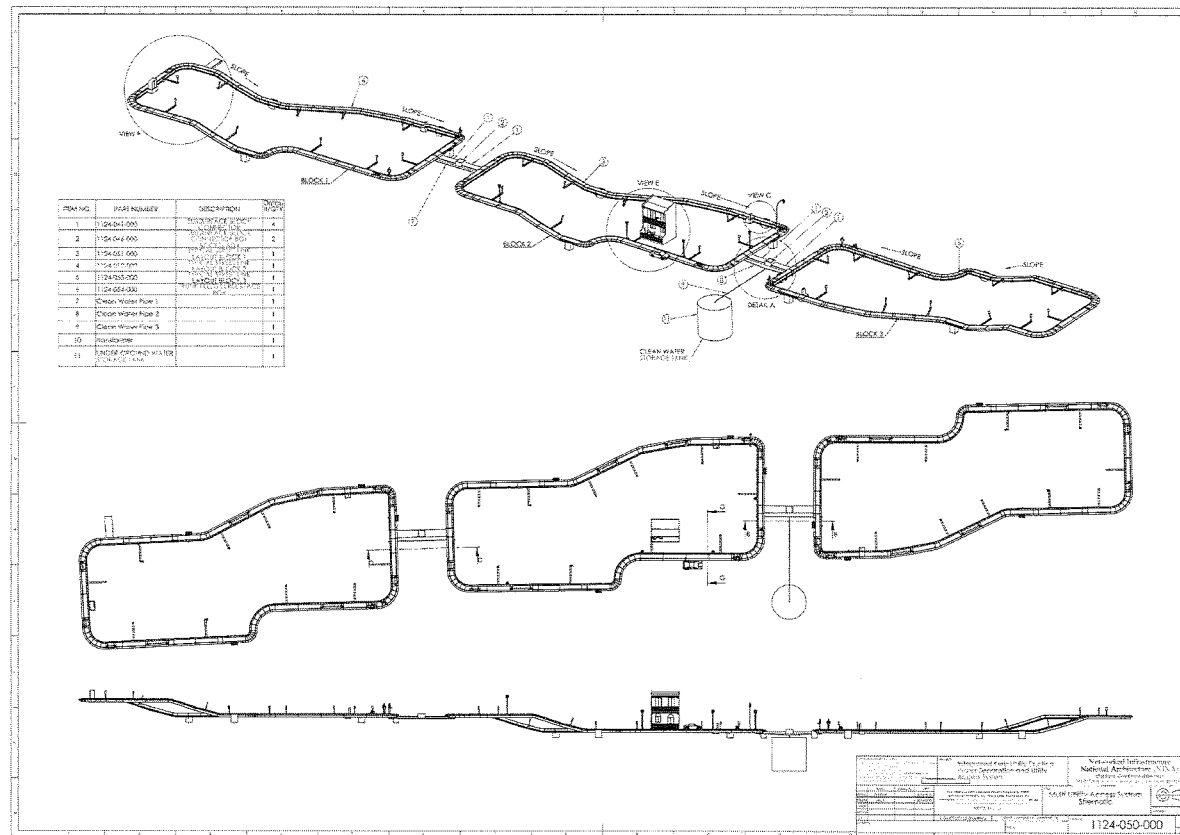
- Christchurch – earthquake
- Mission Beach – Cyclone Yasi
- South East Queensland – flood
- Victorian Bushfires
- Swan Hill – flood
- Joplin USA – tornado
- Japan – earthquake and tsunami

The NINA Access Pathway can't be blown away, knocked over, shaken to pieces or washed away!

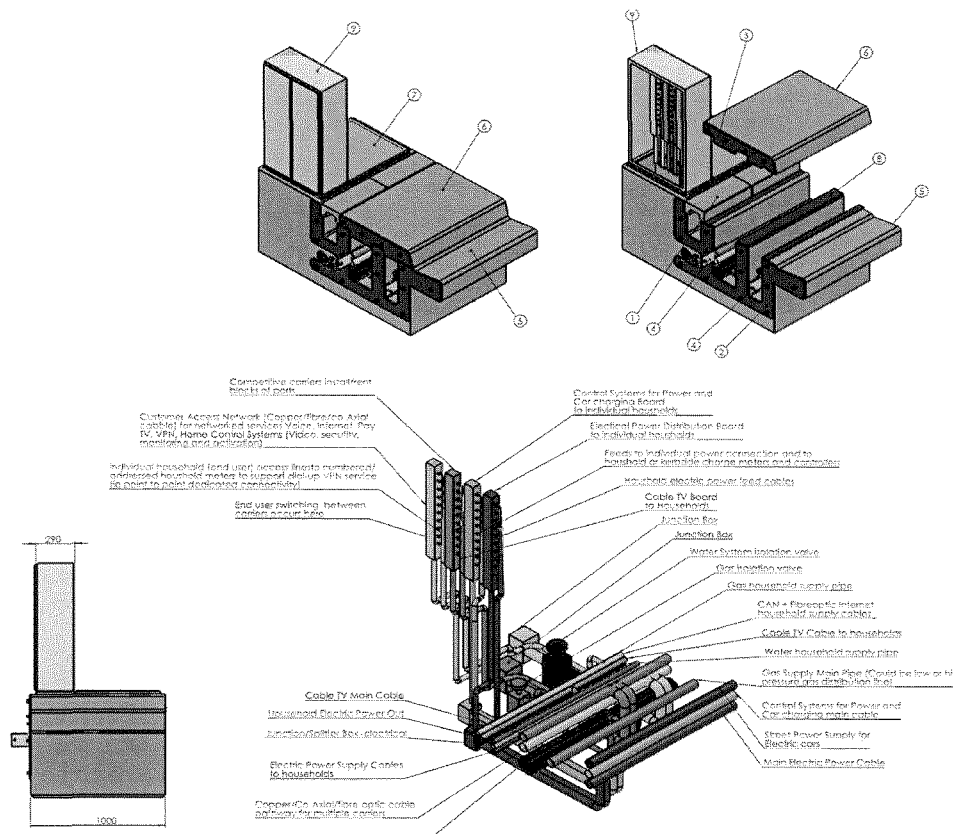
Being visible from the surface it can't be missed, therefore, cable breaks become a thing of the past.



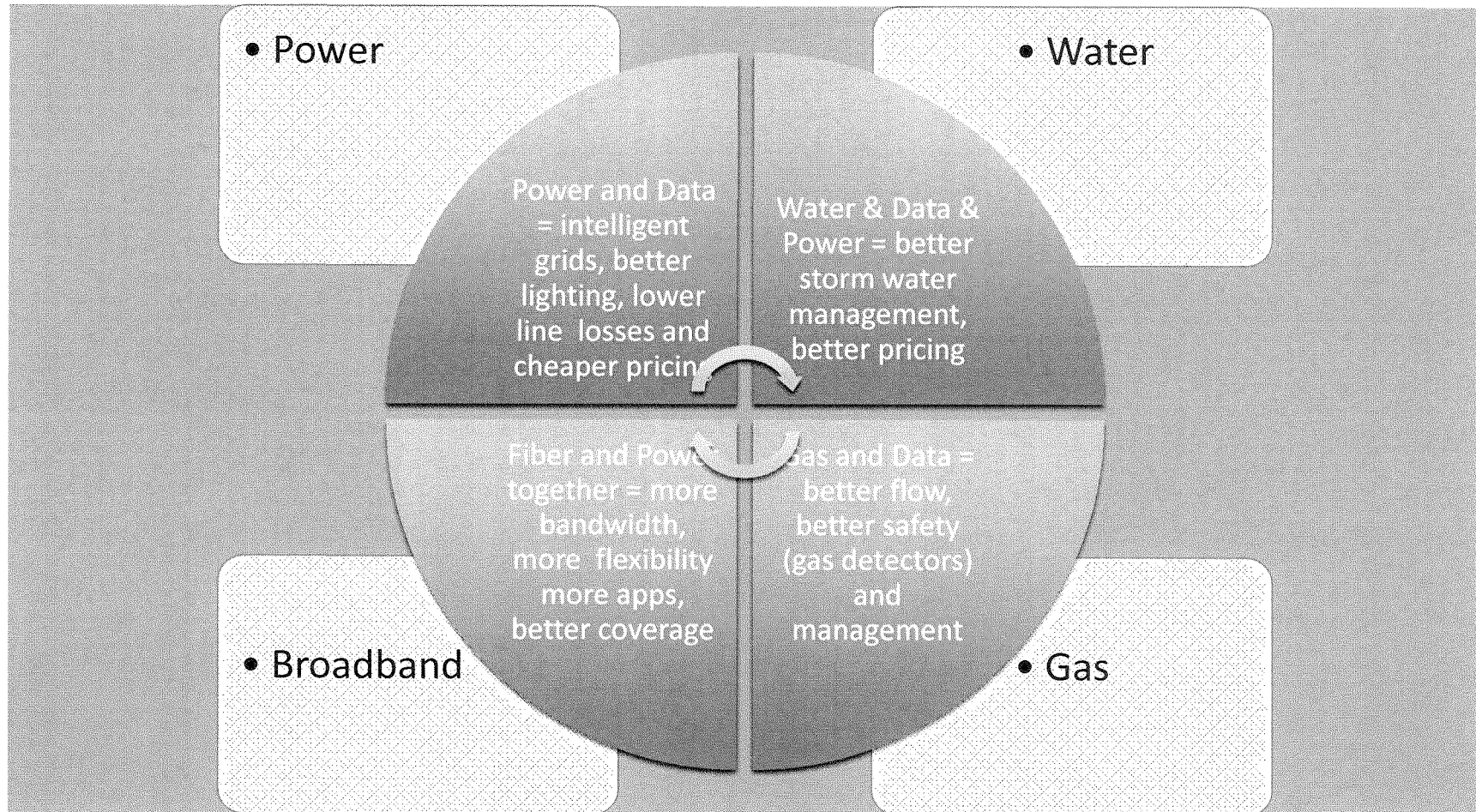
NINA represents a new “operating system” that integrates the functionality of curbs, ducting, pavement systems into “frames” through which power, gas, water, communications and other utilities systems are distributed and managed.



Access nodes are located along the line of the pathway from here feeder channels provide access households or to equipment spaces, once installed digging is no longer required. NINA brings the customer to the curb!



Co-location will lead to lower charges not higher! We desperately need to reduce the inflationary impact of utilities!



Physical utilities access is big business..

- NINA has estimated that national cost of ducting and poles is estimated to be \$14bn per annum and rising and is a major contributor to inflation

Utility	Network Access Cost/month	Mode of Distribution	Civil Component "Ducting"
Data	\$25	Optical fibre cable (conduit optional)	\$13.72
Pay TV	\$25	Co-axial (conduit optional) buried in footpath poles	\$5.95
Legacy telephony	\$20	Copper (conduit optional) buried pipes, pits, poles	\$12.60
Electricity	\$114	Copper HV and LV cables, poles	\$79.63
Gas	\$30	Low pressure gas pipe or hose (50mm) buried in footpath	\$3.92
Water	\$16	PVC, ceramic, metal, pipes buried in footpath	\$7.82
Street lighting	\$10	Pole light power charged to councils passed on in rates	\$7.00
Total	\$239		\$130.64

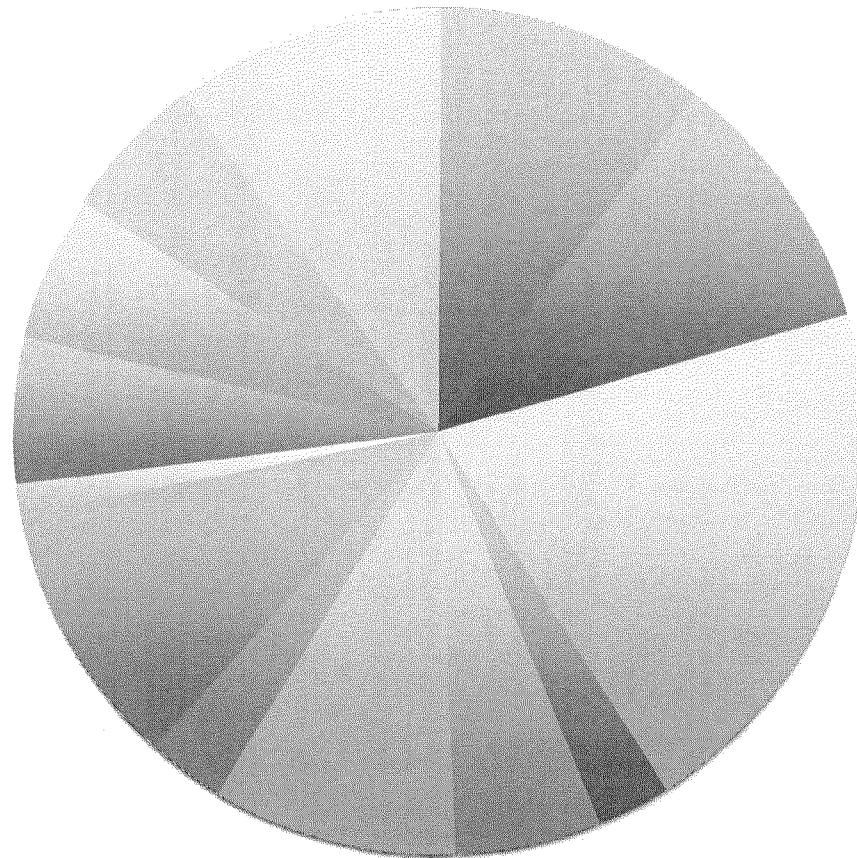


The NINA Model has as its customers Layer 2 infrastructure providers, e.g. the NBN, which is a Layer 2 provider, it would face competition as would water, electricity and gas distribution infrastructure providers



The NINA Pathway can accommodate a broad spectrum of services and platforms which make it's business model resilient

Revenue Components



- Broadband
- Pay-IP TV
- Power Distribution
- Telecom
- Water
- Car Power
- Lighting
- Gas
- Backhaul
- Wireless
- Control
- Other
- Metering



As the number of services providers rises in each category, duct access prices fall and competitive incentives are maintained, take-up by incumbents is important, but not critical, revenue based on these rates are discounted 70% in Year 1 and 30% in Year 12

	Year 1	Year 12	
Service	Start	End	Price Falls
Broadband	\$11.00	\$7.40	-32.8%
Pay-IP TV	\$11.00	\$9.86	-10.3%
Power Distribution	\$22.00	\$19.73	-10.3%
Telecom	\$6.00	\$8.07	34.5%
Water	\$6.00	\$5.38	-10.3%
Car Power	\$10.00	\$8.97	-10.3%
Lighting	\$6.32	\$4.25	-32.8%
Gas	\$22.00	\$14.79	-32.8%
Backhaul	\$12.00	\$8.07	-32.8%
Wireless	\$12.00	\$5.38	-55.2%
Control	\$12.00	\$8.07	-32.8%
Other	\$12.00	\$8.07	-32.8%
Multi Meter	\$1.76	\$1.00	-43.3%

\$/month/SP/Addressable Household



It will be important to get all arms of government on board, there are benefits for all and they have good reasons to do so...

Multiple Government Stakeholders

Local Government

Cost savings, royalties,, improved services, better land values so better rates, can address infrastructure backlogs

State Government

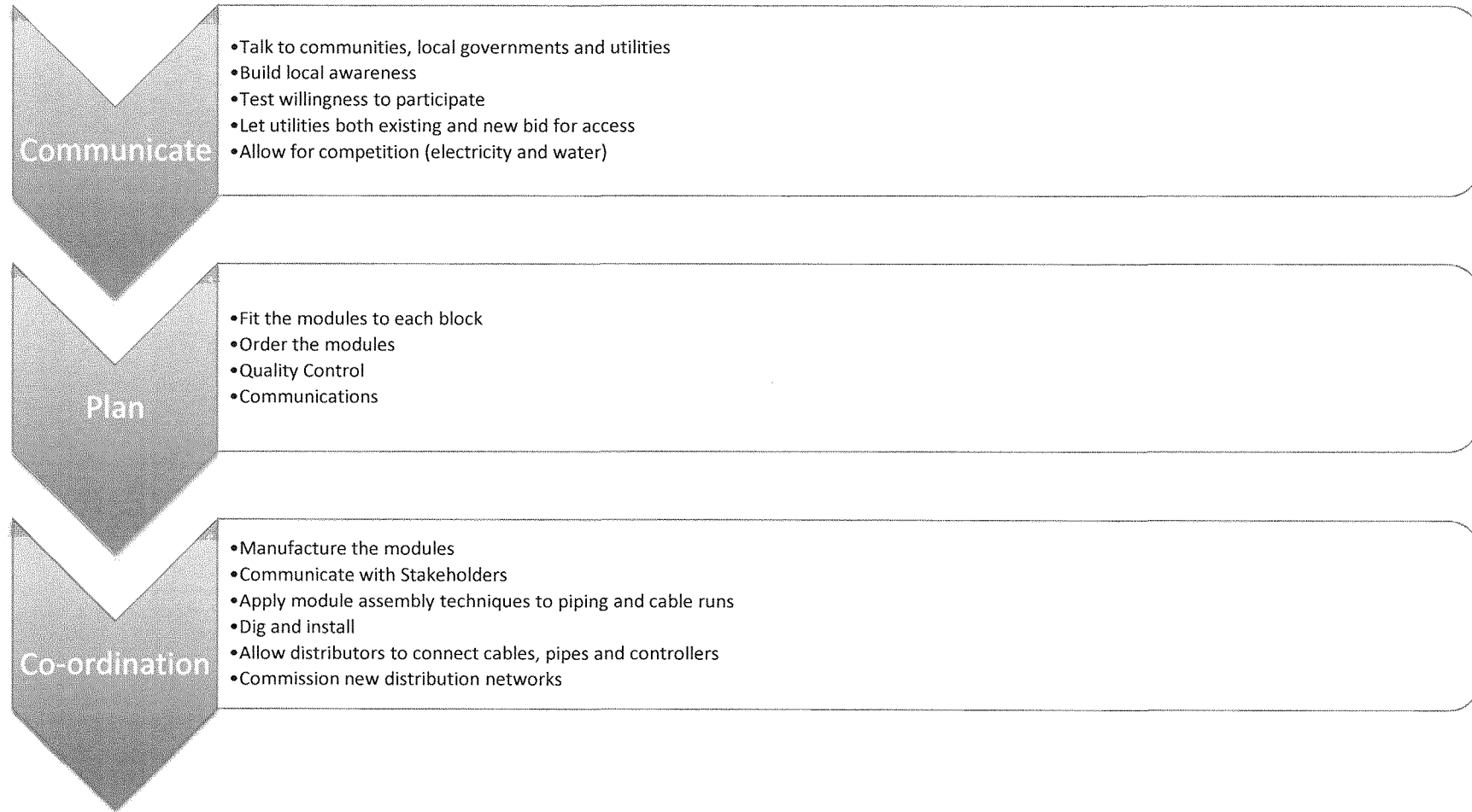
Better economics for utilities privatization,
Increased state productivity,
Capital Savings Water,
Lower debt, better housing policy (lower cost as utilities services are paid by NINA owner)

Federal Government

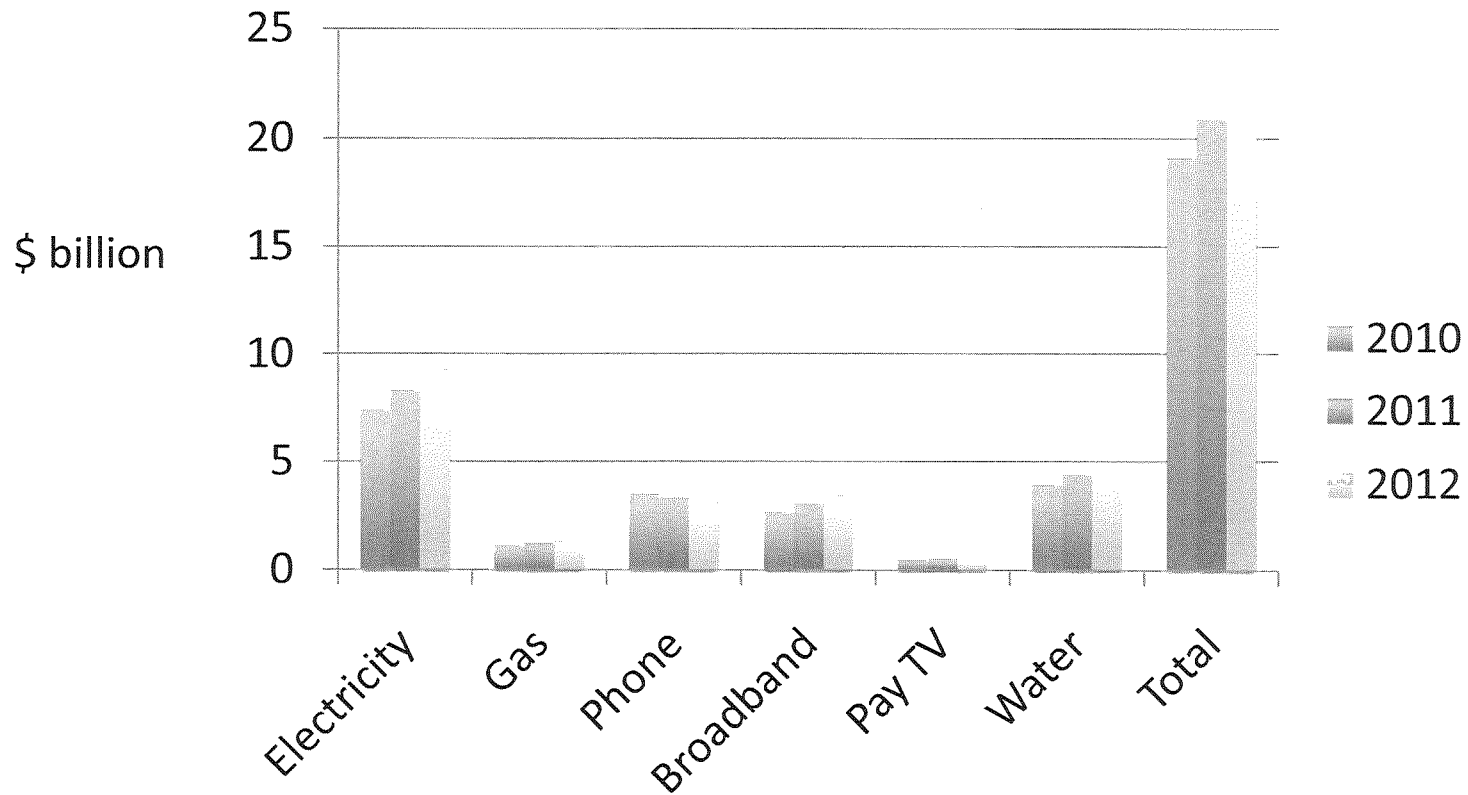
Ownership options, reduced regulatory burden
Economic reform, productivity gains, better fiscal management, better environmental policy, increased taxation receipts, better regional policy, better digital policy, better industry policy, better balanced economy



Co-ordination between Stakeholders is the key and requires Communication, Planning and Co-ordination



Utility distribution civil costs are huge and are rising faster than inflation..



Source: AER, ACCC, Nina Analysis



Who are the natural investors and potential owners of the the NINA Access Pathway™? There are many, but mostly subject to access to funding.

- Local Governments
- Public Private Partnerships
- Private Enterprise
- State Governments
- Federal Government



The door is open for private enterprise to step in....

- State Governments – no money, constrained by reluctance to assume debt
- Federal Government – currently struggling with complexity of infrastructure ownership, NBN is marginal, debt is politically dangerous
- Liberal/Coalition has a record of preferring private ownership likely to win next election particularly if it has a clear positive vision for Australia future.
- Local governments – a “natural” owner but lacking in funds, indications are they would welcome PPP or work on a royalty basis and give up cost of maintaining kerbs and gutters. Australia should consider a “muni” (local government bond to support high productivity infrastructure) likely an attractive instrument in current globally poor sovereign debt environment.
- Public Private Partnership – there are many possible combinations
- Private - a massive “new asset” class, high rates of return, great growth! The world is full of cash looking for a safe long term investment.



What are the benefits for a private owner?

- NINA would provide a strong stable and secure income stream, potentially up to \$1800 per household per annum, nationally this would represent a cash inflow of \$16 billion per annum.
- NINA represents a new asset class “multi utility access pathways”
- A wide range of investments could be funded from the cash flows.
- It would be a long lived asset generating IRR in the range of 15-20%, it could support investment in Layer 2 businesses, create new business opportunities e.g. 480V power distribution for electric cars, water recycling, air-conditioning, urban data, networking etc...
- Stable cash flows can be leveraged to support debt funding once the project was established.

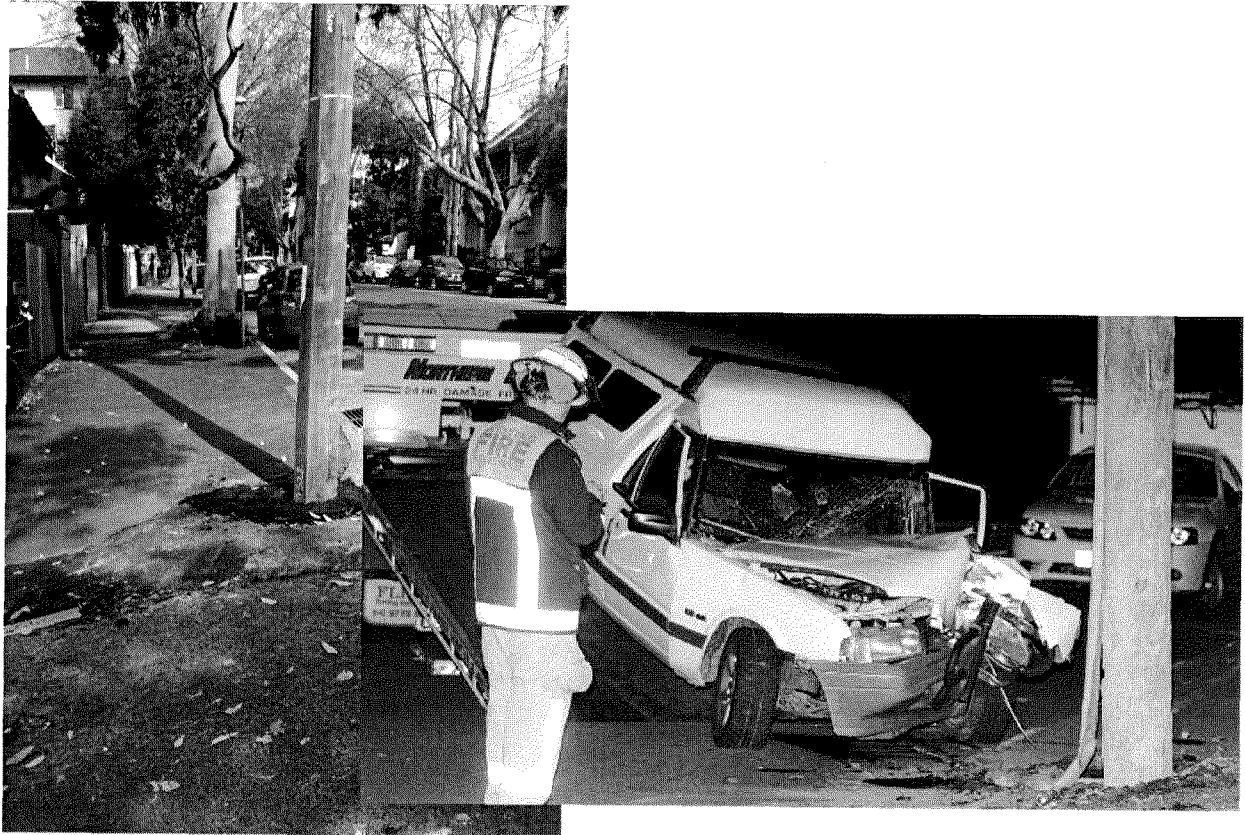


Local Government support is essential, so why should local government support NINA?

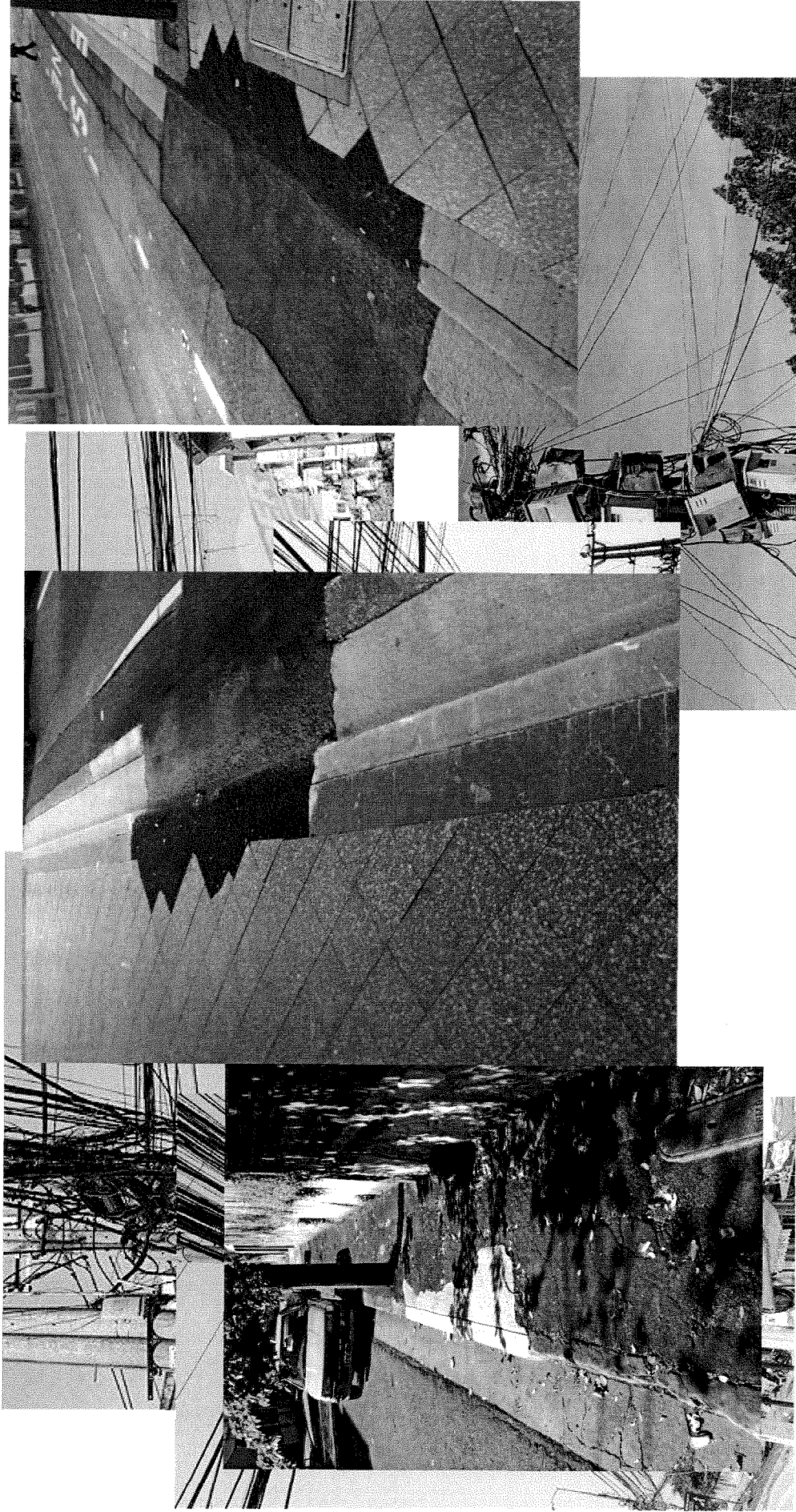
- Local governments are under pressure to find ways of placing power lines underground but come up against financing barriers, the cost is very hard to justify on a single utility model and they are under huge pressure to limit rate increases.
- Local Government could partner/JV with private enterprise and receive an income stream as a result. Again capital availability limits their contribution, solved by a “muni”
- Local governments could “privatize” kerbs and gutters and use royalties (10% assumed in the NINA model) to improve, expand services and or reduce rates.
- Local Government would also benefit from competition in electricity, lighting and water supply markets thereby lowering council costs. Land values are also likely to rise, in NINA areas supporting rates income.



There are many costs associated with the current distribution platforms that are not being recognized!



Where and when does it stop!



The current approaches give Australia very ordinary grades for distribution infrastructure, NINA can fix that and take us to top of the class!!

INFRASTRUCTURE	ACT	TAS	VIC	WA	SA	NSW	QLD	NT
Potable Water	B-	B-	C	B-	B	B-	B-	C-
Waste Water	C+	C	B-	B	B-	C+	B-	C-
Storm Water	C+	C-	C-	C	D	C	C+	B+
Electricity	B+	B-	C-	B-	B-	C-	C-	C-
Gas	A-	C	C	C-	B+	C	C	A-
Telecoms	B-	C+	C	C-	C	C-	C-	C-

Source: The Grattan Institute December 2010, Engineers Australia, Infrastructure Report Card

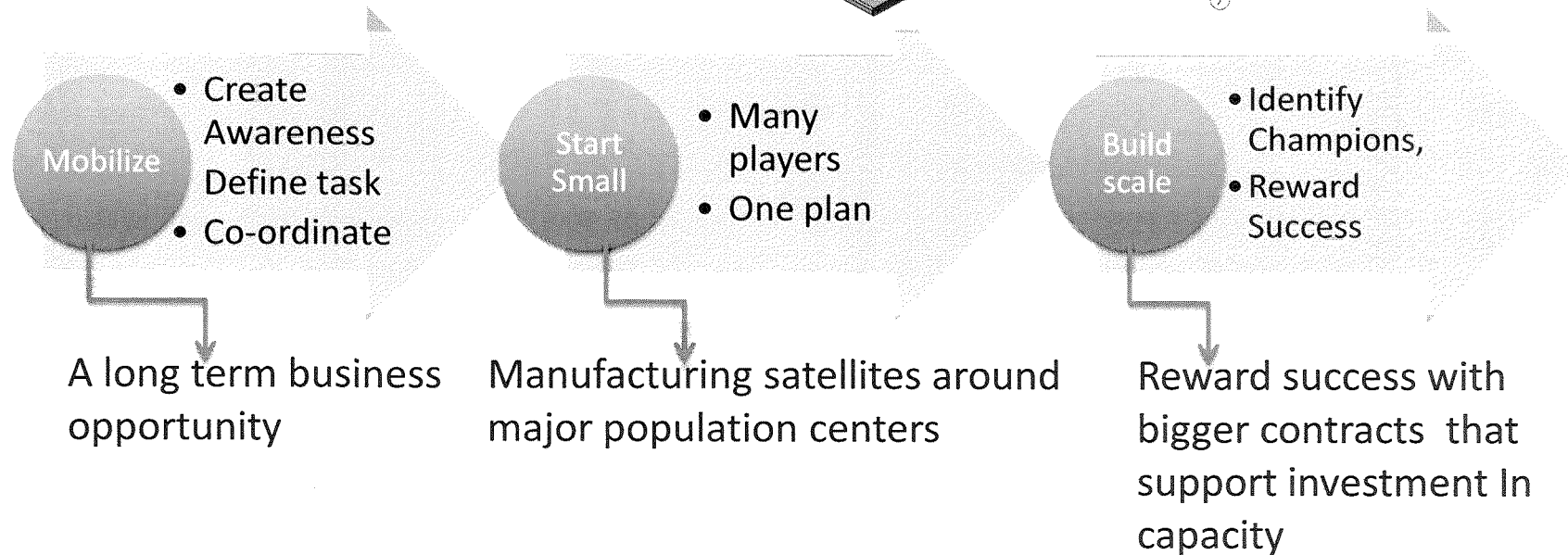
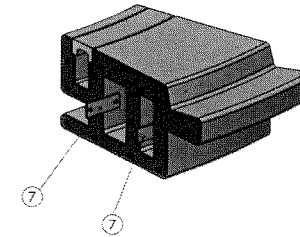
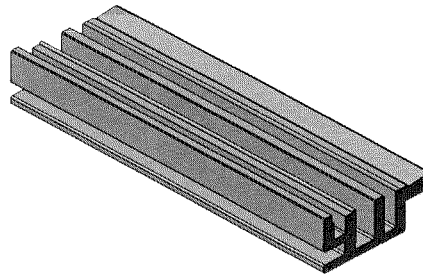
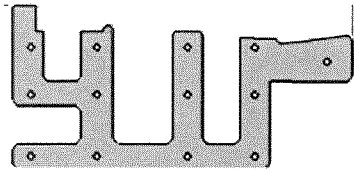


It's a BIG job, but once it starts there will be no turning back, the Community will love it and demand it!

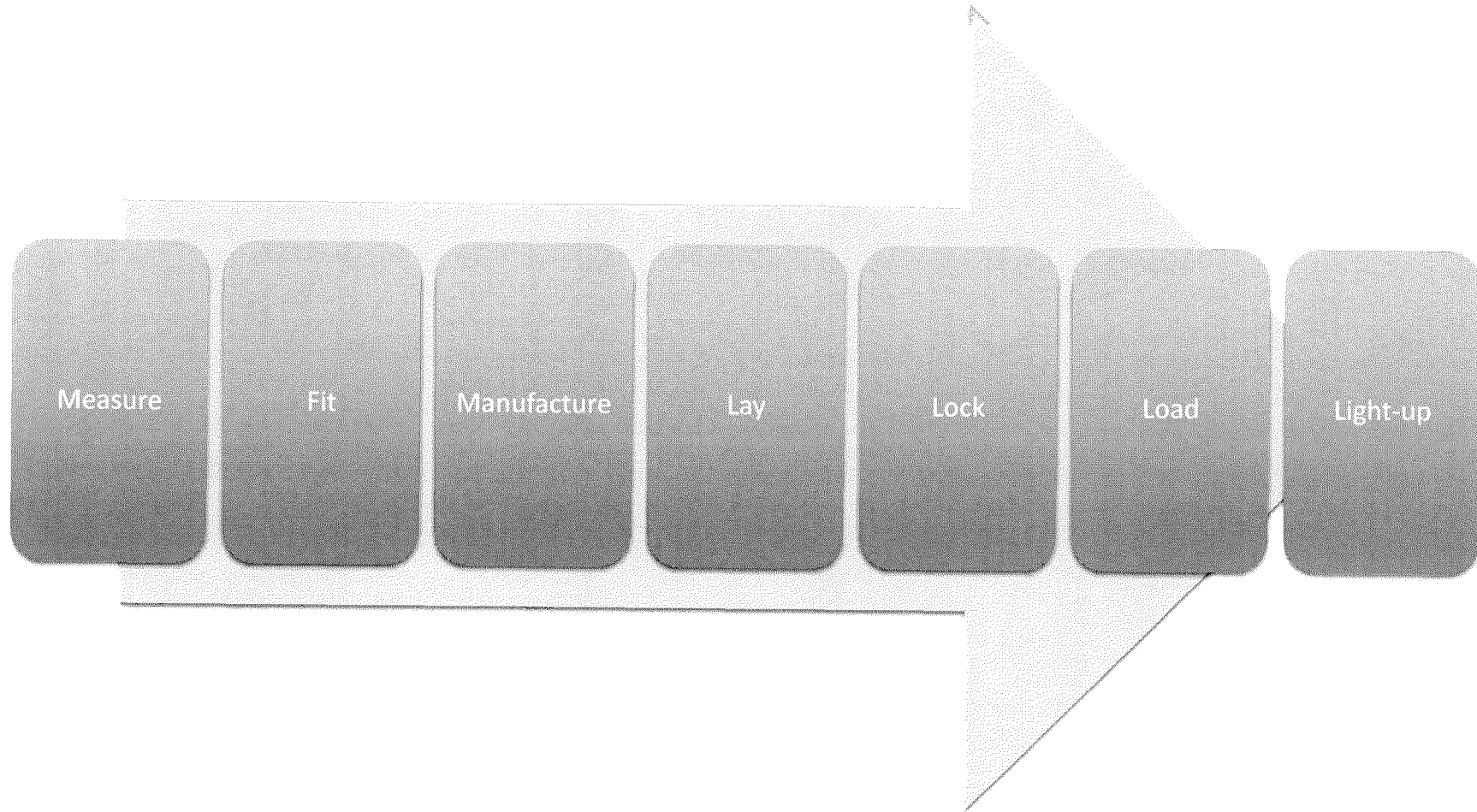
- Nobody likes power poles!
- Everybody wants neater cleaner footpaths and walkways ours are already 3rd world and will soon get worse!
- Everybody would like water security, services that don't collapse in storms, not to see people killed in car crashes against power poles
- People are sick of utility price rises when they realize that it is because of poor decisions and a lack of imagination they will get angry!
- If new services are not affordable they will fail
- People need a NEW vision of how it CAN happen not just how hard and expensive it is!



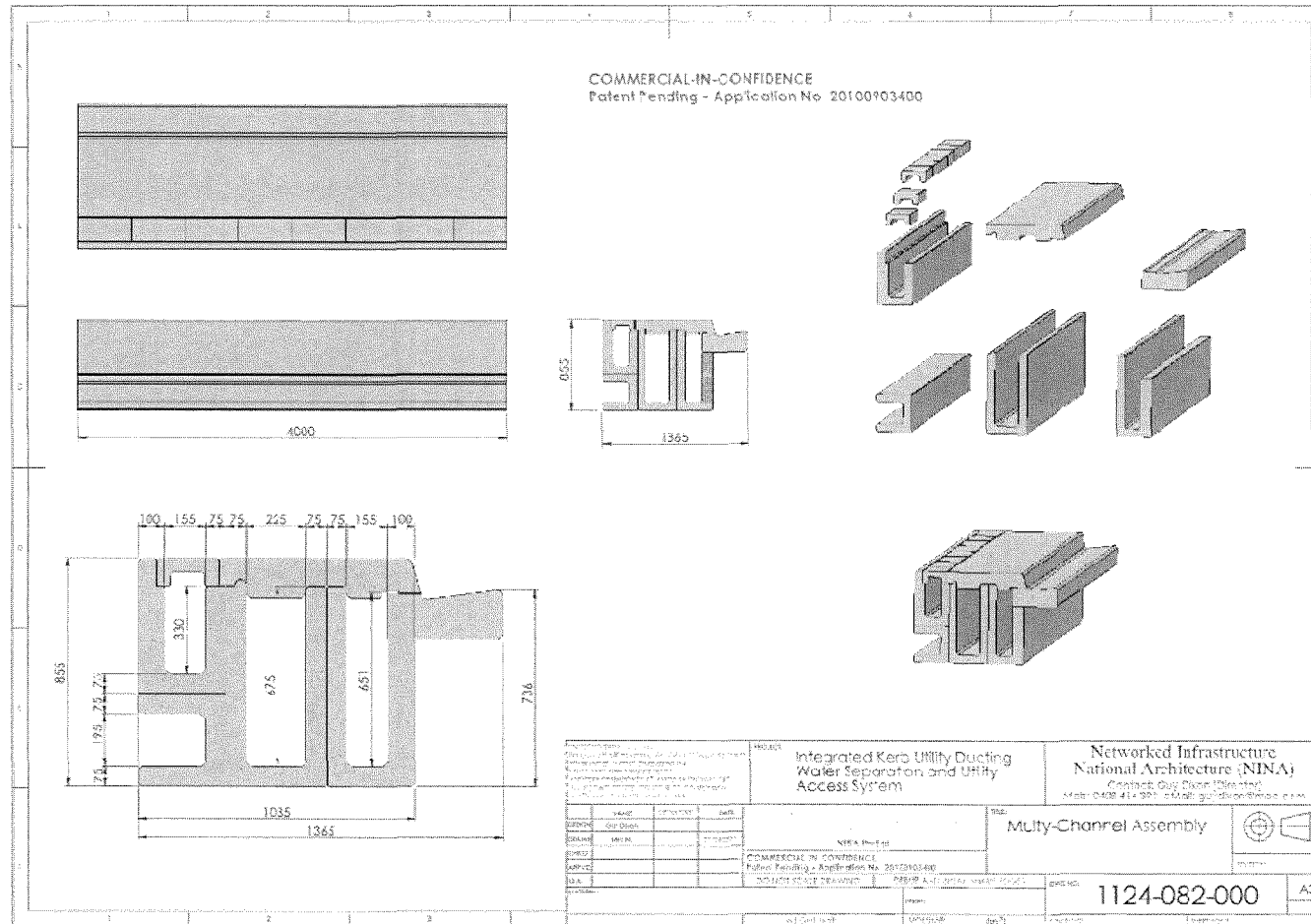
The precast concrete industry will need to build scale this is a great manufacturing business opportunity introducing greater diversity into the economy, we can do more than mine! NINA will consider owning its own manufacturing plant if outsourcing is too expensive...



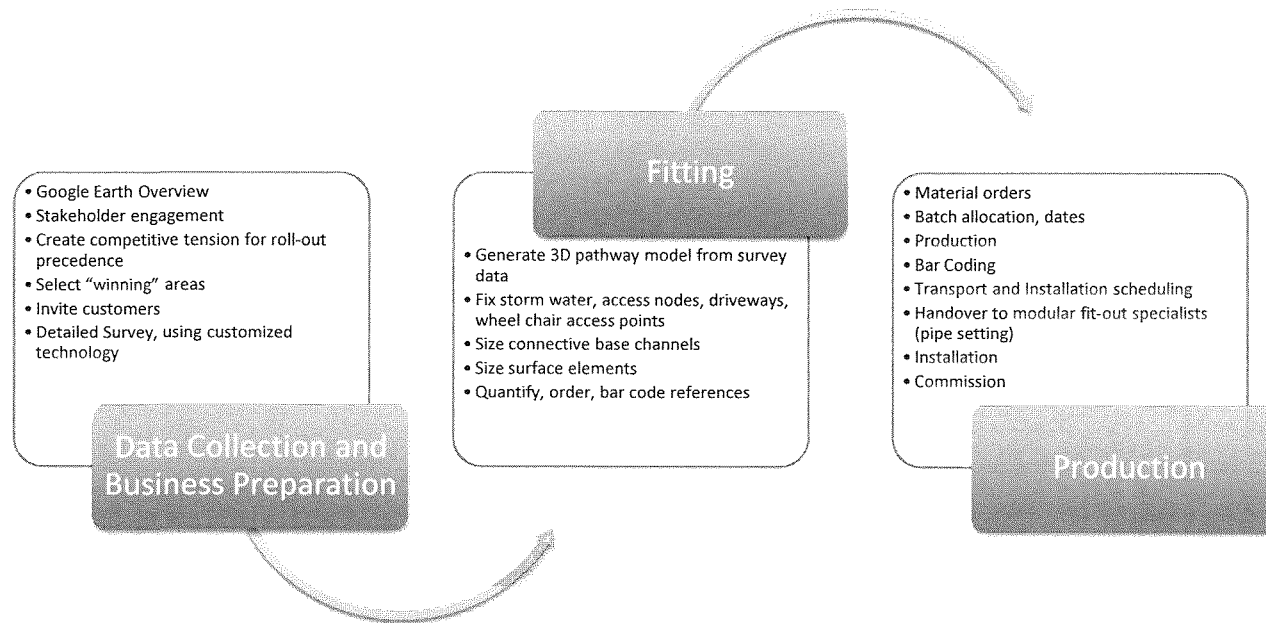
Employing lean manufacturing NINA is seeking a 2 week timeframe from decision to commission of a residential block, there are lots of growth elements in survey, equipment manufacture, supply, logistics, network management, photonics, control systems...



NINA is now focusing on design for manufacture, functional flexibility, and maximizing economic returns. The use of channel elements facilitates the use of high volume production techniques as used in the manufacture of hollow core precast concrete walls, e.g. Elematic systems



NINA views the production as equivalent to a lean printing production process...

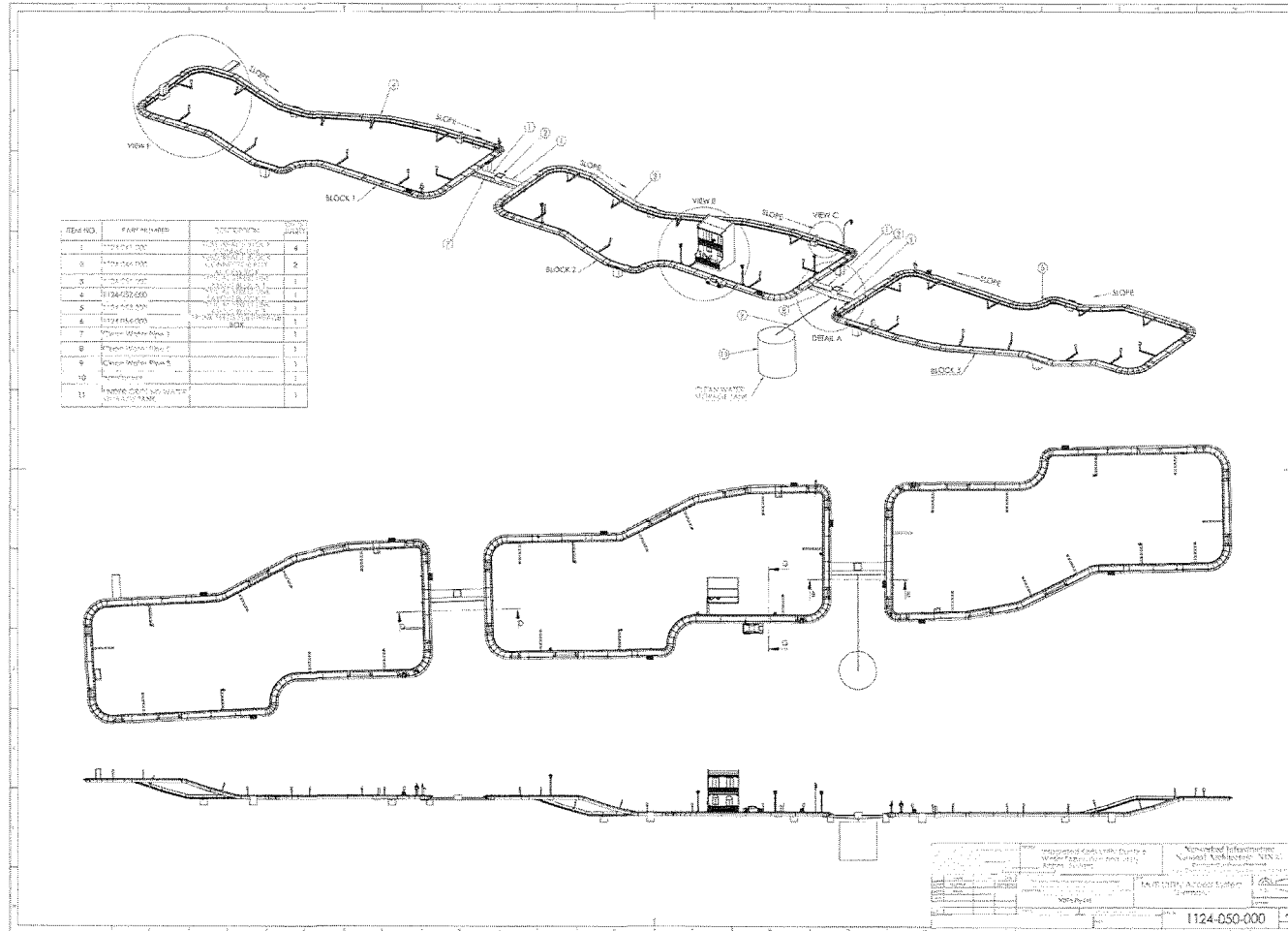


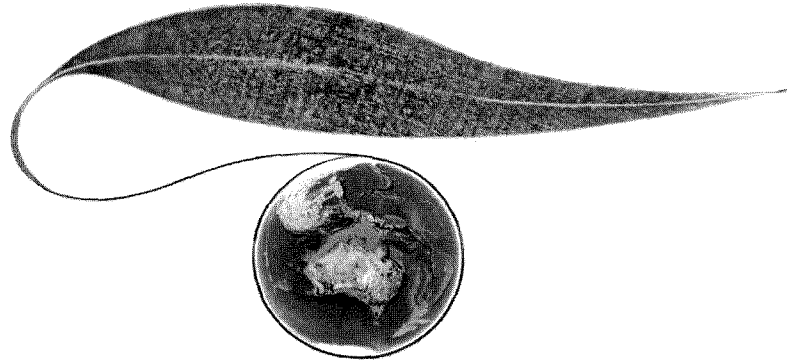
NINA works for rural and regional communities

- Infrastructure upgrades are required across rural and regional Australia, these communities are characterized by residential blocks just as they are in major cities.
- By deploying NINA in country towns we can protect local waterways from toxic run-offs
- NINA will turn regional communities into “fiber islands” these can be linked via the regional broadband black-spots program (already funded separately from NBN) and established trunk fibers and microwave.
- This will be a boon as it will encourage “tree-changers” to live in rural and regional Australia, keep young people in the bush and or support their eventual return.
- Gas, electricity, water, data and other services are more easily deployed and managed, local energy generation (solar, gas, waste fuels, thermal, hydro) will benefit by lower cost access to customers which increase margins.



Network roll-outs would feed out from known utility points of presence, production capacity can be built flexibly and close to sources of cement. Modular design and manufacturing will generate massive economies of scale.





Foundations for life, pathways to the future..

Do not hesitate to contact...!

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2025

