



Low Impact Development
Consulting



Environmentally Sustainable Design

Sustainability Management Plan for:

85 Sharps Road, Tullamarine

Prepared for: EMKC³

Prepared by: Low Impact Development Consulting

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e: info@lidconsulting.com.au

p: 03 9016 9486

a: Level 6, 114 Flinders St, Melbourne 3000

w: www.lidconsulting.com.au



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The content of this document represents the entirety of work output or recommendations offered by LID Consulting for this particular project. This content supersedes all other verbal discussions undertaken by LID Consulting representatives in relation to this project.

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 LID acknowledges and pays respect to the Australian Aboriginal and Torres Strait Islander people, to their ancestors and elders, past, present and emerging, as the traditional custodians of the lands upon which we work and live. We recognise Aboriginal and Torres Strait Islander people's deep cultural and spiritual relationships to the water, land and sea, and their rich contribution to society.

Executive summary

Project summary

Site type	Non-residential development
Building type	Data centre
Council	Brimbank City Council
BESS Score	51%

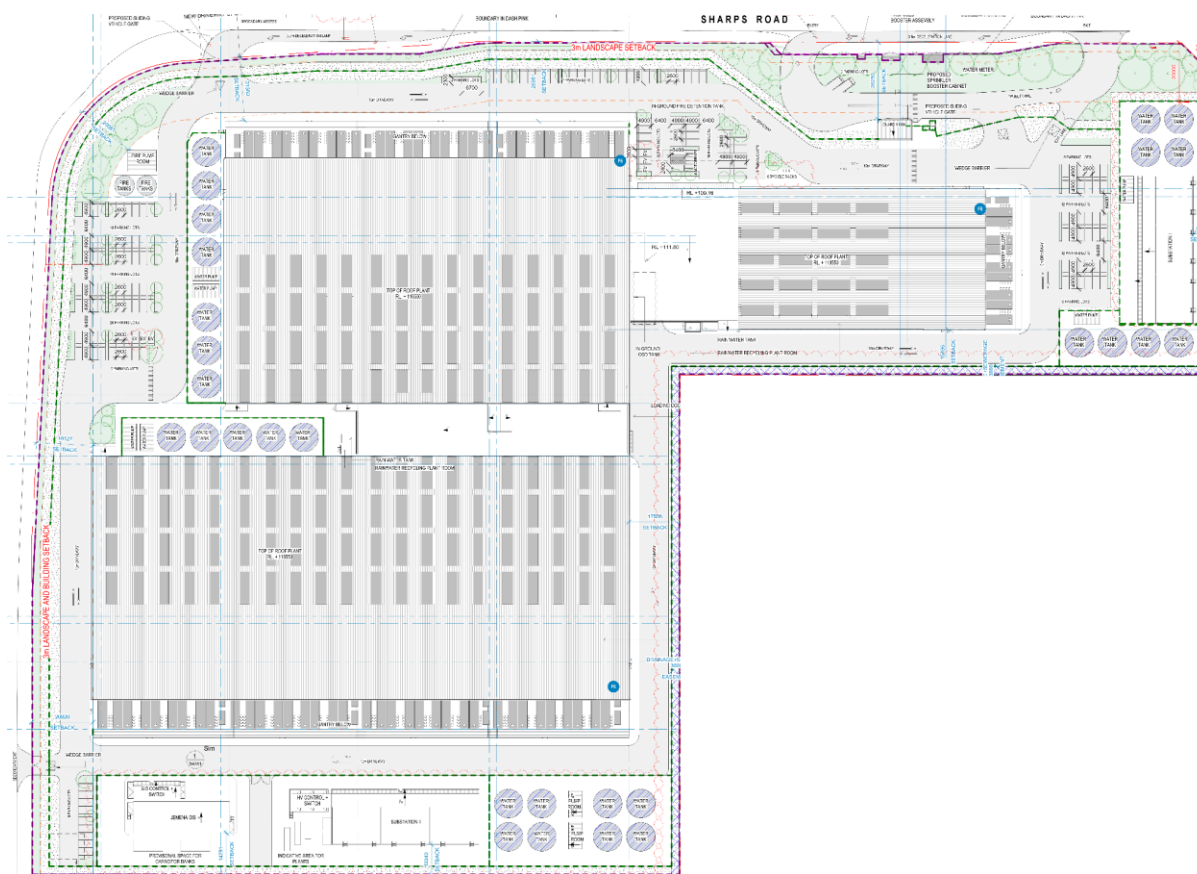


Figure 1: Proposed Site Layout

This report addresses the environmentally sustainable development requirements under the specific Council Planning Scheme (relevant clauses listed below), specifically per clause 15 Built environment and heritage:

Planning should promote development that is environmentally sustainable and minimise detrimental impacts on the built and natural environment.

Planning should facilitate development that:

- *Is adapted and resilient to climate related hazards*
- *Supports the transition to net zero greenhouse gas emissions*
- *Minimises waste generation and supports resource recovery*
- *Conserves potable water*
- *Supports the use of, and access to, low emission forms of transport*
- *Protects and enhances natural values*
- *Minimises off-site detrimental impacts on people and the environment.*

This sustainability report details measures that meet and often exceed mandatory Environmentally Sustainable Design (ESD) requirements for this type of development.

The body of the report contains a full list of ESD initiatives to be included in the development.

Mandatory guidelines and tools addressed in this report as relevant to sustainability include:

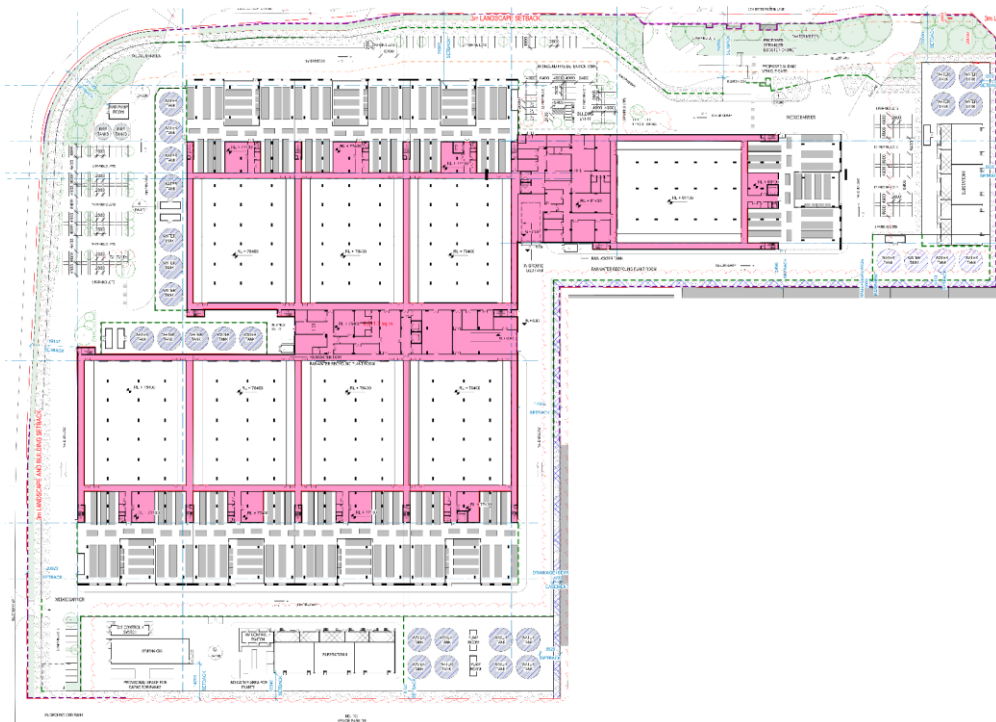
- National Construction Code (NCC) Volume One Section J;
- Victorian Planning Policy (VPP) and Local Planning Policy (LPP) clauses including
 - 11 Settlement
 - 12 Environmental and Landscape Values
 - 15 Built Environment and Heritage
 - 15.01-2S Building Design
 - 15.01-2L-02 Environmentally Sustainable Development
 - 19.03-3S Integrated Water Management
 - 53.18 Stormwater Management in Urban Development
- Built Environment Sustainability Scorecard (BESS); and
- The STORM assessment.

The proposed development will address the relevant ESD requirements of the above planning scheme provisions.

Results summary

Further to the above initiatives and in conjunction with others listed in this report, the development was assessed using the 'Built Environment Sustainability Scorecard' (BESS), obtaining a total score of 51%. A score of 50% or greater (including compliance under water, energy, stormwater and IEQ categories) demonstrates a Best Practice environmentally sustainable development.

Note as the BESS framework credits are largely not applicable to data centre buildings, these areas have been excluded from the BESS assessment. Data centre spaces will still be subject to the initiatives described in this report that are outside of the BESS framework, satisfying relevant planning requirements for sustainable design. The below plan identifies in pink typical areas entered into the BESS tool.



Commitment & documentation on plans

Where possible the “ESD initiatives” in each section **should be included on the plans**.

Examples include (where relevant):

- Water tank retention volume, location, and reuse connections
- Shading devices
- The openable component of a window
- Mechanical equipment
- Hot water system location and type
- External materials
- Electric Vehicle (EV) charging facilities
- Location for internal and external waste bins
- Other relevant readily shown items.

Where items are not usually shown on town planning plans, these can be included on a notes box on the drawings to ensure they flow through to construction drawings, or they can be included in the specification.

As a minimum this ESD report must be referenced in a single note, such as:

“Plans are to be read in conjunction with the endorsed ESD report (which forms part of the town planning permit submission), and all initiatives contained within must be implemented to the satisfaction of the responsible authority”

How to read this report

Initiatives within this report are catalogued by relevant Best Practice ESD categories. Each individual initiative has reference to the relevant compliance framework (where relevant), as well as description of the commitment, detailed compliance parameters, and sustainability benefits.

The below legend is provided for reference:

Compliance framework reference

Description of commitment (what).

Detail of compliance parameters (how).

Description of sustainability benefits (why).

Abbreviations used in this report include:

- NCC - BCA – National Construction Code - Building Code of Australia
- SDAPP – Council Sustainable Design Assessment in the Planning Process
- BESS – Built Environment Sustainability Scorecard

Energy

Goals

- Minimise greenhouse gas emissions from operational energy consumed – Energy source selection
- To improve the efficient use of energy and reduce total operating greenhouse gas emissions
- To reduce energy peak demand through particular design measures (e.g. appropriate building orientation, shading to glazed surfaces, optimise glazing to exposed surfaces, space allocation for solar panels and external heating and cooling equipment)
- Improve efficiency in energy use through greater use of renewable energy technologies and other energy efficiency upgrades

Initiatives

Energy source and Net Zero strategy

BESS Energy 2.6

The proposed development will include all-electric services.

Given the nature of the development and requirement for continuous electricity supply, the facility will incorporate back-up diesel generators for use in emergencies (e.g. blackouts). Generators are located on naturally ventilated plant decks (not regularly occupied), and will be utilised infrequently. As such there is no perceived elevated carcinogenic risk to building occupants.

Heating/cooling systems, hot water supply, and cooking facilities in the proposed development will be electric:

- Heating/cooling within primary habitable spaces (offices) will be electric heat pump systems
- HWS will be from heat pump systems for tech space buildings 1 and 2
- Cooking will be from electric, rather than gas services

Specification of all-electric services supports decarbonisation goals, and can facilitate net zero operational emissions where electricity is sourced from a carbon neutral (GreenPower or carbon offset) supplier.

The site operator publishes annual sustainability reporting, detailing their commitment to Net Zero Scope 1 and Scope 2 emissions by 2030 and 100% renewable energy consumption matching. With investment in renewables projects across Australia as well as internationally, FY24 demonstrated 74% renewables matching for operational energy consumption across the organisation.

Building sealing

NCC2022 Volume 1 Part J5 Building Sealing

The proposed development will incorporate building sealing measures for improved energy efficiency.

Building sealing will be in accordance with NCC requirements, including:

- Compressible foam or similar seals provided around doorways from conditioned to non-conditioned spaces;
- Draft protection devices along the bottom edge of external swing doors;
- Multi-fit cable and pipe seals/adhesive membrane grommets for sealing around pipes or conduits passing through the building envelope; and
- Self-closing dampers fitted to exhaust fans.

Where power or data points etc. are required installed on external walls, acoustic fire rated wall boxes will be installed behind these power and data points for electrical safety, rather than compromising the external wall envelope.

Building sealing prevents un-intended air movement through the thermal envelope (infiltration and exfiltration). Air gaps in the building fabric result in uncontrolled heating and cooling demands in addition to high risk of structural damage due to condensation internally in well insulated envelope walls.

It is important to ensure air-tight connections between internal lining on exterior walls, ceiling and floor plate, around electrical, mechanical, and hydraulic penetrations going through the air-tight barrier by using a system of grommets, membranes and tapes. Alternatively, a combination of plasterboard and caulking with high level attention to detail can make a large difference to the air leakage rate of the building.

Hot water supply

BESS management 2.3, BESS Energy 1.1 & 2.1, NCC2022 Volume 1 Section J

The proposed development will incorporate efficient hot water systems.

Water heating systems will be within one star of the best available, or 85% of the performance of the best available for the required capacity. Heat pump hot water systems will be employed for tech space buildings 1 and 2, with all amenities and wet spaces requiring hot water supplied by these heat pump systems.

Specification of performant building systems will facilitate efficient use of energy throughout the operational life of the building.

External shading

NCC2022 Volume 1 Part J4D6 Walls and Glazing, BESS IEQ 3.4

The proposed development incorporates external shading for north, east and west facing glazing.

Shading of north facing glazing will be fixed horizontal overhanging elements or adjustable louvre style.

Shading of east and west facing glazing will be box shrouds, vertical louvres or adjustable shading systems.

Refer to architectural drawings for further detail of proposed shading systems.

External shading is a significant aspect of passive solar design. Optimal shading design allows for passive heat rejection in hot weather and passive heat gain in cold weather, reducing reliance on mechanical heating and cooling systems and providing operational energy and greenhouse gas emissions reductions, as well as lower peak energy demand.

Lighting

NCC2022 Volume 1 Part J7D3 Artificial Lighting, BESS Energy 3.7

High efficiency lighting systems will be specified.

LED lighting will be used, with maximum illumination power density rates in accordance with NCC allowances, with typical wattage allowances as follows:

Space	Maximum Illumination Power Density (W/m ²)
Storage, services	1.5
Offices	4.5
Services	14
Stairs	2
Plant rooms	4
WC, staff	3
Corridors	5

Where recessed lighting is specified, light fittings are to be IC4 rated to allow insulation to be installed as a continuous layer without cutouts.

Data halls will have specialised task lighting as suited to specific lighting needs.

Specification of efficient lighting systems will facilitate reduced energy consumption and greenhouse gas emissions, and reduce peak energy demand.

Lighting controls

NCC 2022 Volume 1 Part J7D3 Artificial Lighting

Lighting controls will be implemented throughout the facility to promote efficient operation of artificial lighting.

Internal lighting will:

- Be dimmable and controlled by daylight sensors to minimise the energy consumption when adequate daylight is present;
- Utilise motion sensors to ensure lights turn off for energy saving behaviour when spaces are not occupied; and
- Have switch zoning to separately control lighting within a natural lighting zone defined as a distance from the window equal to the depth of the floor to window head height.

External lighting will:

- Have daylight sensors and either a timer or motion sensor installed.

These lighting control measures further promote efficient use of energy, reduce energy consumption and greenhouse gas emissions, and reduce peak energy demand.

Active transport

Additional sustainability practice

Tech spaces will incorporate design features promoting active transport and reduce lift usage. Given the nature of the development there is a requirement to control access between secured areas.

Door hardware and stair design will facilitate vertical transport within tech spaces. Stairs within tech spaces will be non-enclosed and well lit, encouraging stair use in lieu of lifts.

These design measures further promote efficient use of energy, reduce energy consumption and greenhouse gas emissions, and reduce peak energy demand.

Commissioning and tuning

Additional sustainability practice

The facility will be subject to commissioning and seasonal tuning for not less than one year after completion.

Commissioning and tuning practices and commitments are to be detailed in services engineering documentation.

Ongoing monitoring and tuning of building systems will facilitate energy usage optimisation, reduce greenhouse gas emissions, and reduce peak energy demand.

Indoor Environment Quality

Background

Building design and material choices impact on indoor environment quality.

Access to daylight and sunshine is advantageous to the wellbeing of humans.

Many paints, adhesives, sealants and flooring types contain Volatile Organic Compounds (VOCs) which are released into the indoor air. Joinery has, over the last 30 years, contained high levels of formaldehyde. VOCs and formaldehyde are recognised as potentially harmful to humans as well as contributors to atmospheric pollution.

Goals

- To achieve a healthy indoor environment quality for the wellbeing of building occupants, including the provision of fresh air intake, and natural daylight.
- To achieve thermal comfort levels with minimised need for heating and cooling.
- To minimise indoor air pollutants by encouraging use of materials with low toxic chemicals levels.
- To minimise noise levels and noise transfer within and between buildings and associated external areas.

Key Outcomes

Regular use areas with Best Practice daylight (%)	33.3% (offices)
Increase in outdoor air supply for mechanically ventilated spaces:	50% (offices)
CO ₂ monitoring to maintain a concentration not greater than:	800 ppm (offices)

Initiatives

Mechanical ventilation

BESS IEQ2.3, NCC2022 Part F6D6(b), AS1668.2 (exceeded)

Where mechanical ventilation is required, the mechanical equipment will be sized to facilitate provision of outdoor air beyond minimum requirements of AS1668.2.

CO₂ sensors will be included in office mechanical ventilation systems to monitor and maintain air quality.

This requirement applies to regularly occupied spaces, including offices, tech rooms, SOC and NOC rooms, and does not apply to data halls which will have specialised environmental controls.

Mechanical ventilation system will:

- Be sized to deliver outdoor air at a rate (L/s) 50% greater than requirements of AS1668.2; and
- Monitor and maintain a concentration of CO₂ not greater than 800 ppm.
- Be designed to allow easy access for maintenance and cleaning of moisture and debris, and will be cleaned prior to building occupancy.

Mechanical ventilation can ensure appropriate ventilation rates throughout the development regardless of external conditions. Where mechanical ventilation is proposed

for a larger proportion of the development, heat/energy recovery is recommended to minimise the ventilation energy losses.

Higher ventilation levels are also shown to reduce the incidence of air-borne disease transmission.

A balanced mechanical ventilation system ensures the supply of fresh air regardless of external atmospheric conditions such as wind speed, wind direction and temperature. It reduces the amount of unfiltered air infiltrating through cracks and holes in the building envelope due to pressure differences and enhances the indoor air quality. It also reduces the flow of conditioned air exfiltrating through cracks and holes in the building envelope, hence reducing the risk of condensation occurring within the external walls.

Daylight

BESS IEQ 1.4, NCC 2022 F6D4

Best Practice daylight levels are provided to regular use areas (office and meeting rooms).

The proposed development achieves a Daylight Factor of >2% for 33.3% of regular use areas, as determined via the Green Star Hand Calculation Method.

Windows to regular use areas will have a total system (glass and frame) Visible Light Transmittance (VLT) of not less than 40%.

Windows must be sized with an aggregate light transmitting area (measured exclusive of framing members, glazing bars, or other obstructions) not less than 10% of the floor area of the room must be provided in accordance with NCC2022 Part F6D4.

High quality daylight provides improved amenity, and may reduce reliance on artificial lighting.

Low VOC products

BESS IEQ4.1

The development will provide low VOC paints, adhesives, sealants and carpets.

This requirement applies to regularly occupied spaces, including offices, tech rooms, SOC and NOC rooms, and does not apply to data halls which will have specialised construction and finishing requirements.

The VOC content of paints, adhesives and sealants will not exceed the levels listed in the table below (VOC limits are less water and exempt compounds), as derived from Green Star Buildings.

Product category	Maximum VOC content (g/L)
General purpose adhesives and sealants	50
Interior wall and ceiling paint, all sheen levels	16

Trim, varnishes and wood stains	75
Primers, sealers and prep coats	65
One & two pack performance coatings for floors	140
Acoustic sealants, architectural sealant, waterproofing membrane and sealant, fire retardant sealant and adhesives	250
Structural glazing adhesive, wood flooring and laminate adhesive and sealants	100

The VOC content of carpets will not exceed the levels listed in the table below in accordance with the relevant test protocols.

Test protocol	Limit
ASTM D5116 – Total VOC limit	0.5mg/m ² per hour
ASTM D5116 – 4-PC (4-Phenylcyclohexene)	0.05mg/m ² per hour
ISO 16000/EN13419 – TVOC at three days	0.5mg/m ² per hour
ISO 10580 / ISO/TC 219 (document N238) – TVOC at 24 hours	0.5mg/m ² per hour

Volatile Organic Compounds is the term used to describe several hundred petrochemical solvent type compounds found in paints, adhesives, sealants, carpets, reconstituted wood products, and new furniture. Newer buildings generally have higher concentrations of these VOC's that contribute to headache, lethargy etc. in occupants.

Low VOC adhesives and sealants are readily available and can be purchased in bulk to minimise the price premium.

Low formaldehyde products

BESS IEQ4.1

Engineered wood products within the proposed development will be low formaldehyde type.

This requirement applies to regularly occupied spaces, including offices, tech rooms, SOC and NOC rooms, and does not apply to data halls which will have specialised construction and finishing requirements.

Engineered wood products (including MDF, particleboard and plywood) will be formaldehyde class E1 or better.

Formaldehyde emissions in engineered wood products are classed as below:

Class	Limits (mg/L)
Super E0	≤ 0.3
E0	≤ 0.5
E1	≤ 1.0
E2	≤ 2.0

E3	> 2.0
<p>Formaldehyde is used in the production of resins that act as glues for engineered wood products and is a colourless gas with a strong odour. Exposure to formaldehyde can cause irritation in the eyes, nose and throat with various authorities recommend E1 as a maximum emissions class.</p>	

Integrated Water Management

Background

As populations increase and global warming contributes to fast climate change, the access to clean potable water will become more of an issue to Australians and the world. Inefficient use of water can lead to the destruction of habitats. Over-use of artesian water supplies can result in rising water tables and salination of soils.

Furthermore, pollutants that build up on impervious surfaces get washed into the stormwater system and end up in local waterways. Water Sensitive Urban Design is now a major goal of urban development to prevent this occurring.

The quality of water leaving a site (and peak and total stormwater run-off volumes) can be improved by collection of water in water tanks, natural infiltration through gardens and lawns into the soils, and minimisation of impervious pavements or the shedding of water from impervious surfaces into garden beds that have particularly good infiltration into the ground – known as infiltration beds.

Goals

- To ensure the efficient use of water.
- To reduce total operating potable water use.
- To incorporate the use of water sensitive urban design, including stormwater re-use.
- To encourage the appropriate use of alternative water sources.
- To minimise associated water costs
- To reduce the impact of stormwater run-off
- To improve the quality of stormwater run-off
- To achieve best practice stormwater quality outcomes

Key Outcomes

Fixtures/fittings/appliances:	
Kitchen taps	≥5 Star WELS rating
Bathroom taps	≥5 Star WELS rating
WC	≥4 Star WELS rating
Dishwasher	≥5 Star WELS rating
Urinals	Waterless (or within 1 Star WELS of best available)
Rainwater tank retention volume	40,000L (1 no. 20,000L tank per tech building)
Rainwater catchment area (m ²) - nominal	3372 m ²
Rainwater tank connected to	toilets and irrigation

Initiatives

Stormwater quality

BESS Stormwater 1.1, Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG) CSIRO 1999

The proposed development demonstrates Best Practice stormwater quality outcomes.

Stormwater leaving the site will be treated to Best Practice standards in accordance with the Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG) (CSIRO 1999).

The development further incorporates Integrated Water Management principles through rainwater harvesting and re-use and passive irrigation of landscaping.

Details of stormwater quality systems can be found in civil drainage documentation.

The implementation of Water Sensitive Urban Design (WSUD) and Integrated Water Management (IWM) principles minimises negative environmental impacts of stormwater runoff and leads to reduced potable water demand throughout operation.

Fixtures, fittings and appliances

BESS Water 1.1

The proposed development will utilise water efficient fixtures, fittings and appliances.

Fixtures, fittings and appliances will conform to the following WELS ratings:

Fixture/fitting/appliance	WELS Rating
Kitchen taps	≥5 Star WELS rating
Bathroom taps	≥5 Star WELS rating
WC	≥4 Star WELS rating
Dishwashers	≥5 Star WELS rating
Urinals	Waterless (or within 1 Star WELS or best available)

Products will be specified based on recommendations from www.savewater.com.au or from the product search on the following site www.waterrating.gov.au.

The above specifications contribute to a more water efficient and drought resilient development.

Rainwater harvesting and reuse

BESS Water 1.1, BESS Stormwater 1.1, Urban Stormwater Best Practice Environmental Management Guidelines (BPEMG) CSIRO 1999

Rainwater harvesting and reuse systems will be utilised in the proposed development, contributing to a Best Practice stormwater quality outcome and reducing potable water consumption.

Rainwater tanks of 40,000L retention volume will collect rainfall runoff from 3372 m² of roof areas (tech spaces). Rainwater tanks will be connected to toilets and irrigation.

Leaf diverting rain heads and/or first flush diverters will be included upstream of the tank to divert the initial flow from entering the tank when a rain event occurs.

Pumps and manual over-ride switches will be readily accessible in the event of malfunction. The location of tanks, pumps and maintenance access is to be shown on architectural drawings.

The use of rainwater harvesting and reuse systems promotes Integrated Water Management principles, reducing stormwater runoff volume and pollutant concentrations, as well as reducing potable water consumption.

Landscaping

BESS Water 3.1

The development will incorporate potable water efficient landscaping.

Proposed planting will be water efficient and will not require watering after an initial period when plants are getting established. Therefore, no irrigation system is proposed.

Specification of landscaping with no potable water demands further enhances objectives of resource efficiency and climate resilience.

Building systems water use reduction

BESS Water 4.1

Building systems will be designed to be water efficient.

Building systems including fire testing and cooling/chillers will ensure a minimum 80% reduction in potable water consumption.

- Chillers will be waterless, with heat rejection via hybrid dry coolers which under some conditions will consume water.
- The proposed fire safety system will be provided with an annubar test feed downstream of the fire pump in accordance with VBA PN ESM-08, which is reticulated back to fire tanks. This captures and reuses water consumed during fire pump testing, which is the largest water usage. Water consumed during testing of remote sprinkler control valves and remote hydrant testing will not be captured and reused as these are not located in proximity to the fire tank.

The proposed building systems will ensure the efficient use of water, reducing total operating potable water use.

Material Selection

Background

Careful selection of construction materials can help to limit the environmental impacts of the production, transport, and incorporation of these materials in our buildings. In many cases there are similarly performing, comparable but more environmentally friendly product selection options available.

Goals

The goals in environmentally sustainable construction material selection should be to:

- Limit the use of new materials where possible - to help minimise the detrimental outcomes of product manufacture or modification.
- Select durable materials and re-use materials where possible – increase the lifespan of all products.
- minimise the environmental impacts materials used, by encouraging the use of materials with a favourable lifecycle assessment based on the fate of materials, their recycling / reuse potential, their embodied energy, their biodiversity, human health, and environmental toxicity impacts.

Initiatives

Concrete

SDAPP 5.0 Building Materials

The proposed development will incorporate lower embodied carbon concretes.

Concretes with 20-35% (or greater) Supplementary Cementitious Materials (SCMs) such as slag or flyash, or similar geopolymers will be utilised for on-site on-ground poured concrete mixes, subject to structural requirements.

In addition, recycled aggregate, water and/or sand will be included in the concrete mixes.

Concrete mixes with SCMs have circular economy and lower embodied energy components. Waste products such as slag and flyash partially substitute the carbon intensive Portland cement in concrete mixes, reducing the embodied carbon of the concrete product.

Embodied energy levels:

Concrete Product	Embodied carbon (TCO ₂ -e/m ³)	Embodied carbon as a percentage of 32MPA OPC
Generic 32MPA Ordinary Portland Cement (OPC)	0.481	100%
With 20% flyash	0.397	82.5%
With 20% blast furnace slag	0.404	84.0 %

With 50% flyash	0.273	56.8%
With 50% blast furnace slag	0.288	60.0%
With 100% slag or flyash geopolymer replacement (requires structural approval)	0.120	25.0%
Holcim EcoPact	0.198	41.1%
Holcim EcoPact Zero (ECOPact with carbon offset)	0.028	5.8%

Source – *The Green Book*

Light coloured roofing

NCC2022 Volume 1 Part J4D4 (beyond NCC)

The upper surface of roofs will have a solar absorptance (SA) of ≤ 0.35 .

The Colorbond colour range in the link below can inform solar absorptance values of different finishes for metal roof construction:

<https://steel.com.au/resources/colours>

Light coloured roofing can help mitigate Urban Heat Island (UHI) effects by reflecting more solar radiation when compared with darker colours of the same material. This can also result in lower cooling requirements and peak energy demand from the building in operation.

Timber

SDAPP 5.0 Building Materials

Sustainable timber products will be specified for the proposed development.

Framing timber will be sourced from accredited sustainable plantations (either FSC or PEFC/AFS accreditation).

No rainforest timbers will be incorporated i.e. no Oregon, Western Red Cedar, Meranti, Merbau, Teak or Luan.

Specification of sustainable timber products from accredited certification schemes helps to mitigate threats to flora and fauna caused by logging.

Insulation

SDAPP 5.0 Building Materials

Glasswool insulation (where specified) will incorporate recycled content.

A minimum 80% recycled glass content is to be achieved for all glasswool insulation in the proposed development.

In addition, the product will reduce potential negative health effects by not using formaldehyde as a binder.

Specification of circular economy insulation, containing recycled content, significantly reduces embodied carbon.

Carpet

SDAPP 5.0 Building Materials

The proposed development will utilise more sustainable carpet products.

Carpets will:

- Be specified as carpet tiles in lieu of traditional roll product carpet; and
- Utilise underlay with recycled content.

Carpet tiles are to be placed in position or if stuck down, will be a low VOC pressure sensitive contact adhesive, only applied once there is tack in the adhesive. If applied too early these adhesives can become permanent fixings and damage the back of the tile on removal, reducing circular economy benefits.

Carpet underlay may be specified with third party GECA certification.

The proposed carpet products provide circular economy benefits through use of recycled content and consideration of recycling potential at end of product life.

Carpet tiles allow moving of tiles to ensure even wear across the floor, or minimal replacement where required rather than full scale replacement of whole rooms of broadloom carpet. Carpet is generally not recycled often and is a significant component of landfill around the world. Using carpet tiles can minimise the amount of carpet sent to landfill.

Location and Transport

Goals

- To ensure that the built environment is designed to promote the use of walking, cycling and public transport in that order.
- To minimise car dependency
- To promote the use of low emission vehicle technologies and supporting infrastructure

Location

Green travel options are dependent on the following factors:

- Location of the site
- Walking distance of facilities
- Cycling facilities – paths and parking and End-of-Trip facilities
- Public transport facilities
- Parking facilities for other motorised vehicles

Google Maps and similar apps have a bicycling filter indicating where off road bike trails as well as dedicated bike lanes are located. It is expected that the occupants and visitors will use their preferred app or browser to locate bicycle paths and trails, find public transport options with live updates, and identify preferred walking routes to their destination.

Principal Bicycle Network (PBN) routes for each council area are available via the following link <https://www.vicroads.vic.gov.au/traffic-and-road-use/cycling/bicycle-network-planning>

Further detail is contained within the Green Travel Plan prepared for the proposed development.

Key Outcomes

Number of employee bicycle parking racks	8
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Initiatives

Bicycle parking

BESS Transport 1.4 & 1.5, Clause 52.34 (exceeded)

Bicycle parking facilities will be provided for employees and visitors, exceeding planning requirements for office spaces by over 50%.

There are no specific requirements for bicycle parking provisions for Data Centres under clause 52.06 or 52.34.

Bicycle parking facilities are provided as follows:

- 8 employee bicycle parking racks

Refer to architectural drawings for further details of bicycle parking facilities.

The inclusion of bicycle parking facilities promotes the use of sustainable personal transport alternatives, reducing reliance on personal cars.

Waste Management

Goals

- To promote waste avoidance, re-use and recycling during the design, construction, and operation stages of development.
- To ensure durability and long-term re-usability of building materials.
- To ensure sufficient space is allocated for future change in waste management needs, including (where possible) composting and green waste facilities.

Initiatives

Demolition and construction waste

SDAPP 7.0 Waste Management

Demolition and construction activities will minimise waste.

A minimum of 80% of waste (by mass) from demolition and construction activities will be recycled or reused.

Demolition and construction waste management must:

- Allow sufficient space on site to accommodate skips for different waste and recycling streams;
- Clearly label individual skips and bins, with protections from contamination, rain and wind;
- Organise regular pick-up of skips and bins to avoid overloading or misuse of containers;
- Ensure sub-contractors are fully aware of the site's waste management practices;
- Ensure written contracts with trades include waste minimisation practices; and
- Request suppliers collect/recycle packaging.

Relevant demolition and construction contractors are to provide documentation confirming waste and recycling rates by mass.

Poor waste practices lead to a degradation of water, air and land resources. By setting minimum recycling requirements in construction and demolition, the proposed development aims to minimise these environmental impacts.

The following materials can generally be recycled:

- Bricks
- Concrete products (i.e. blocks, roof tiles, pavers etc)
- Unpainted or untreated timber
- Steel / metal products
- Glass
- Unpainted plasterboard
- Plastics
- Carpet underlay
- Carpet tiles
- Asphalt
- Cardboard
- Green waste

Plastering waste

SDAPP 7.0 Waste Management

Plasterboard waste produced during construction will be recycled.

Plastering contractors will be required to supply their own bin and recycle plasterboard off-cuts.

Separation of plasterboard from skip bins helps divert this material from landfill and simplifies the recycling process.

Urban Ecology

Background

Urban development has seen the destruction and displacement of plant species and in turn wildlife habitat. With new developments there is an opportunity to redress this that should be taken up.

Goals

- To protect and enhance habitat biodiversity of the urban environment
- To encourage the retention of significant trees
- To encourage the planting of indigenous vegetation
- To reduce CO₂ in the atmosphere through increased vegetation
- Reduce the urban heat island effect by greening urban areas, buildings, transport corridors and open spaces with vegetation (c115.02-1S)
- Encourage retention of existing vegetation and planting of new vegetation as part of development proposals (c115.02-1S)

Key Outcomes

Vegetation as percentage of total site area (%)	8.9%
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Initiatives

Vegetative cover

BESS Urban Ecology 2.1

The proposed development will include vegetated landscaping.

The landscaping plan will ensure a minimum of 8.9% of site area is vegetated.

Vegetated areas include garden beds and turf, and exclude hard landscaping elements such as paving and decks, as well as bin areas and storage areas.

Gardens and green areas help to minimise the Urban Heat Island (UHI) effect through shading, evapotranspiration and higher solar reflectivity. Vegetation also increases the opportunities for biodiversity on site.

Management, Innovation, Climate Adaptation and Community Benefit

Goals

- To encourage design and innovation in the development, which positively influence the improved life of, and sustainability of, the building.
- To encourage a holistic and integrated design and construction process and ongoing high performance.

Initiatives

Climate adaptation and resilience

SDAPP 9.1 Melbourne's Climate

The proposed development will address climate responsive design principles.

The following risks are to be considered and addressed in design:

- Higher temperature threats
 - Building fabric of the thermal envelope to be well insulated, with appropriate shading for improved thermal comfort.
 - Location of cooling equipment and air intakes to be considered, aiming to reduce intake of pollutants and limit intake near heat sources. Cooling equipment should be located away from heat sources.
- Extreme wind threats - external services are to be installed so as to be protected from windblown vegetation or high wind loads.
- Extreme rainfall events - heating/cooling, services, lifts, and energy supply services are to be located to not suffer the effects of heavy rainfall, hail stones or flooding of roof drainage systems or flooding at ground level.
- Poor indoor air quality - airborne dust or smoke ingress is to be considered and addressed.
- Weather proofing - Windows and doors will be designed to handle water from extreme rainfall events.

Consideration of climate responsive design principles results in more resilient, healthy, efficient and comfortable buildings.

Appendix 1 - BESS Report

BESS, 85 Sharps Rd, Tullamarine VIC 3043, Australia 85 Sharps Rd, Tullamarine ...

BESS Report

Built Environment Sustainability Scorecard



This BESS report outlines the sustainable design commitments of the proposed development at 85 Sharps Rd Tullamarine Victoria 3043. The BESS report and accompanying documents and evidence are submitted in response to the requirement for a Sustainable Design Assessment or Sustainability Management Plan at Brimbank City Council.

Note that where a Sustainability Management Plan is required, the BESS report must be accompanied by a report that further demonstrates the development's potential to achieve the relevant environmental performance outcomes and documents the means by which the performance outcomes can be achieved.

Your BESS Score

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

51%

Project details

Name	85 Sharps Rd, Tullamarine VIC 3043, Australia
Address	85 Sharps Rd Tullamarine Victoria 3043
Project ID	BF537460-R2
BESS Version	BESS-8

Site type	Non-residential development
Account	info@lidconsulting.com.au
Application no.	
Site area	80,020 m ²
Building floor area	34,046 m ²
Date	19 December 2024
Software version	2.0.1-B.574

Performance by category

● This project ● Maximum available

Category	Weight	Score	Pass
Management	5%	16%	✘
Water	9%	60%	✔
Energy	28%	59%	✔
Stormwater	14%	100%	✔
IEQ	17%	58%	✔
Transport	9%	37%	✘
Waste	6%	33%	✘
Urban Ecology	6%	12%	✘
Innovation	9%	0%	✘

The Built Environment Sustainability Scorecard is an initiative of the Council Alliance for a Sustainable Built Environment (CASBE). For more details see www.bess.net.au

Buildings

Name	Height	Footprint	% of total footprint
Building 1	4	40,450 m ²	100%

Dwellings & Non Res Spaces

Non-Res Spaces

Name	Quantity	Area	Building	% of total area
Office				
Office - tech + meet + SOC/NOC (occupied)	1	34,047 m ²	Building 1	100%
Total	1	34,046 m²	100%	

Supporting Evidence

Shown on Floor Plans







Credit	Requirement	Response	Status
Water 3.1	Annotation: Water efficient garden details		-
Stormwater 1.1	Location of any stormwater management systems (rainwater tanks, raingardens, buffer strips)		-
Transport 1.4	Location of non-residential bicycle parking spaces		-
Transport 2.3	Location of nominated motorbicycle parking spaces		-
Waste 2.2	Location of recycling facilities		-
Urban Ecology 2.1	Location and size of vegetated areas		-

Supporting Documentation

Credit	Requirement	Response	Status
Management 2.3a	Section J glazing assessment		-
Energy 1.1	Energy Report showing calculations of reference case and proposed buildings		-
Energy 3.7	Average lighting power density and lighting type(s) to be used		-
Stormwater 1.1	STORM report or MUSIC model		-
IEQ 1.4	A short report detailing assumptions used and results achieved.		-

Credit summary













Management Overall contribution 4.5%

		16%
1.1 Pre-Application Meeting		0%
2.3 Thermal Performance Modelling - Non-Residential		50%
3.2 Metering - Non-Residential		N/A ✦ Scoped Out
N/A - single operator		
3.3 Metering - Common Areas		N/A ✦ Scoped Out
N/A - no common areas		
4.1 Building Users Guide		0%



Water Overall contribution 9.0%

		Minimum required 50%	60% ✓ Pass
1.1 Potable Water Use Reduction		44%	
3.1 Water Efficient Landscaping		100%	
4.1 Building Systems Water Use Reduction		100%	







Energy Overall contribution 27.5%

		Minimum required 50%	59% ✓ Pass
1.1 Thermal Performance Rating - Non-Residential		37%	
2.1 Greenhouse Gas Emissions		100%	
2.2 Peak Demand		100%	
2.6 Electrification		0% ⚙ Disabled	
Credit is available when the energy supply is set to all-electric (no gas or wood).			
2.7 Energy consumption		100%	
3.1 Carpark Ventilation		N/A ✦ Scoped Out	
N/A - no enclosed carpark			
3.2 Hot Water		100%	
3.7 Internal Lighting - Non-Residential		100%	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A ✦ Scoped Out	
No cogeneration or trigeneration system in use.			
4.2 Renewable Energy Systems - Solar		0% ⚙ Disabled	
No solar PV renewable energy is in use.			
4.4 Renewable Energy Systems - Other		N/A ✦ Scoped Out	
No other (non-solar PV) renewable energy is in use.			








Stormwater Overall contribution 13.5%

	Minimum required 100%	100%	✓ Pass
1.1 Stormwater Treatment		100%	





IEQ Overall contribution 16.5%

	Minimum required 50%	58%	✓ Pass
1.4 Daylight Access - Non-Residential		33%	✓ Achieved
2.3 Ventilation - Non-Residential		66%	✓ Achieved
3.4 Thermal comfort - Shading - Non-Residential		100%	
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%	
4.1 Air Quality - Non-Residential		100%	

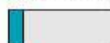





Transport Overall contribution 9.0%

	37%		
1.4 Bicycle Parking - Non-Residential		100%	
1.5 Bicycle Parking - Non-Residential Visitor		0%	
1.6 End of Trip Facilities - Non-Residential		0%	
2.1 Electric Vehicle Infrastructure		0%	
2.2 Car Share Scheme		0%	
2.3 Motorbikes / Mopeds		100%	

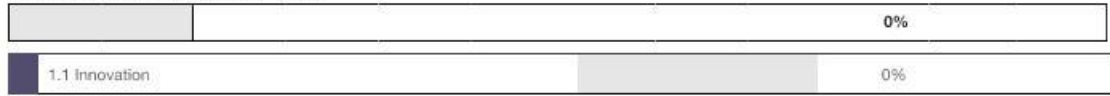
Waste Overall contribution 5.5%

	33%		
1.1 - Construction Waste - Building Re-Use		0%	
2.1 - Operational Waste - Food & Garden Waste		0%	
2.2 - Operational Waste - Convenience of Recycling		100%	

Urban Ecology Overall contribution 5.5%

	12%		
1.1 Communal Spaces		0%	
2.1 Vegetation		25%	
2.2 Green Roofs		0%	
2.3 Green Walls and Facades		0%	
3.2 Food Production - Non-Residential		0%	

Innovation Overall contribution 9.0%



Credit breakdown

Management Overall contribution 4.5%

	16%
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1.1 Pre-Application Meeting 0%

Score Contribution	This credit contributes 50% towards the category score.
Criteria	Has an ESD professional been engaged to provide sustainability advice from schematic design to construction? AND Has the ESD professional been involved in a pre-application meeting with Council?
Question	Criteria Achieved ?
Project	No

2.3 Thermal Performance Modelling - Non-Residential 50%

Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Has a preliminary facade assessment been undertaken in accordance with NCC2022 Section J4D6?
Question	Criteria Achieved ?
Office	Yes

Criteria	Has preliminary modelling been undertaken in accordance with either NCC2022 Section J (Energy Efficiency), NABERS or Green Star?
Question	Criteria Achieved ?
Office	No

3.2 Metering - Non-Residential N/A Scoped Out

N/A - single operator

This credit was scoped out	N/A - single operator
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3.3 Metering - Common Areas N/A Scoped Out

N/A - no common areas

This credit was scoped out	N/A - no common areas
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4.1 Building Users Guide 0%

Score Contribution	This credit contributes 16.7% towards the category score.
Criteria	Will a building users guide be produced and issued to occupants?
Question	Criteria Achieved ?
Project	No

Water Overall contribution 9.0%








	Minimum required 50%	60%	✓ Pass
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Water Approach	
What approach do you want to use for Water?:	Use the built in calculation tools
Do you have a reticulated third pipe or an on-site water recycling system?:	No
Are you installing a swimming pool?:	No
Are you installing a rainwater tank?:	Yes
Fixtures, fittings & connections profile	
Showerhead:	Scope out
Bath:	Scope out
Kitchen Taps:	>= 5 Star WELS rating
Bathroom Taps:	>= 5 Star WELS rating
Dishwashers:	Default or unrated
WC:	>= 4 Star WELS rating
Urinals:	Scope out
Washing Machine Water Efficiency:	Scope out
Which non-potable water source is the dwelling/space connected to?:	Tank 1
Non-potable water source connected to Toilets:	Yes
Non-potable water source connected to Laundry (washing machine):	No
Non-potable water source connected to Hot Water System:	No
Rainwater tank profile	
What is the total roof area connected to the rainwater tank?: Tank 1	3,372 m ²
Tank Size: Tank 1	40,000 Litres
Irrigation area connected to tank: Tank 1	-
Is connected irrigation area a water efficient garden?: Tank 1	-
Other external water demand connected to tank?: Tank 1	-
1.1 Potable Water Use Reduction	44%

Score Contribution	This credit contributes 71.4% towards the category score.
Criteria	What is the reduction in total potable water use due to efficient fixtures, appliances, rainwater use and recycled water use? To achieve points in this credit there must be >25% potable water reduction.
Annotation	Details of rainwater harvesting and reuse systems to be prepared by the relevant hydraulic and drainage engineers. 2x20kL tanks are to be supplied (one for each tech space), which will provide water for flushing toilets in tech spaces and landscape irrigation.
Output	Reference
Project	49662 kL
Output	Proposed (excluding rainwater and recycled water use)
Project	37235 kL
Output	Proposed (including rainwater and recycled water use)
Project	35746 kL
Output	% Reduction in Potable Water Consumption
Project	28 %
Output	% of connected demand met by rainwater
Project	9 %
Output	How often does the tank overflow?
Project	Never / Rarely
Output	Opportunity for additional rainwater connection
Project	5368 kL
3.1 Water Efficient Landscaping	 100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Will water efficient landscaping be installed?
Annotation	Water efficient landscaping will be specified with no irrigative demands beyond an initial establishment period (12months). Any irrigation systems will be connected to rainwater harvesting systems only, with no potable water consumption.
Question	Criteria Achieved ?
Project	Yes
4.1 Building Systems Water Use Reduction	 100%
Score Contribution	This credit contributes 14.3% towards the category score.
Criteria	Where applicable, have measures been taken to reduce potable water consumption by >80% in the buildings air-conditioning chillers and when testing fire safety systems?
Annotation	Fire safety system test water will be reticulated to fire tanks (excluding sprinkler control valves remote from the fire water tanks), ensuring >80% of water savings. Chillers are to be waterless.
Question	Criteria Achieved ?
Project	Yes

Energy Overall contribution 27.5%


	Minimum required 50%	59%	✔ Pass
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	Use the BESS Deem to Satisfy (DtS) method for Non-residential spaces?:	Yes	
	Do all exposed floors and ceilings (forming part of the envelope) demonstrate meeting the required NCC2022 insulation levels (total R-value upwards and downwards)?:		
	Does all wall and glazing demonstrate meeting the required NCC2022 facade calculator (or better than the total allowance)?:	Yes	
	Are heating and cooling systems within one Star of the most efficient equivalent capacity unit available, or Coefficient of Performance (CoP) & Energy Efficiency Ratios (EER) not less than 85% of the CoP & EER of the most efficient equivalent capacity unit available?:	Yes	
	Are water heating systems within one star of the best available, or 85% or better than the most efficient equivalent capacity unit?:	Yes	
	1.1 Thermal Performance Rating - Non-Residential		37%
	Score Contribution	This credit contributes 36.4% towards the category score.	
	Criteria	What is the % reduction in heating and cooling energy consumption against the reference case (NCC2022 Section J)?	
	2.1 Greenhouse Gas Emissions		100%
	Score Contribution	This credit contributes 9.1% towards the category score.	
	Criteria	What is the % reduction in annual greenhouse gas emissions against the benchmark?	
	2.2 Peak Demand		100%
	Score Contribution	This credit contributes 4.5% towards the category score.	
	Criteria	What is the % reduction in the instantaneous (peak-hour) demand against the benchmark?	
	2.6 Electrification		0% <input checked="" type="checkbox"/> Disabled
	Credit is available when the energy supply is set to all-electric (no gas or wood).		
	This credit is disabled	Credit is available when the energy supply is set to all-electric (no gas or wood).	
	2.7 Energy consumption		100%
	Score Contribution	This credit contributes 18.2% towards the category score.	
	Criteria	What is the % reduction in annual energy consumption against the benchmark?	
	3.1 Carpark Ventilation		N/A <input checked="" type="checkbox"/> Scoped Out
	N/A - no enclosed carpark		
	This credit was scoped out	N/A - no enclosed carpark	
	3.2 Hot Water		100%

Score Contribution	This credit contributes 4.5% towards the category score.	
Criteria	What is the % reduction in annual energy consumption (gas and electricity) of the hot water system against the benchmark?	
3.7 Internal Lighting - Non-Residential		100%
Score Contribution	This credit contributes 9.1% towards the category score.	
Criteria	Does the maximum illumination power density (W/m2) in at least 90% of the area of the relevant building class meet the requirements in Table J7D3a of the NCC 2022 Vol 1?	
Question	Criteria Achieved ?	
Office	Yes	
4.1 Combined Heat and Power (cogeneration / trigeneration)		N/A ✦ Scoped Out
	No cogeneration or trigeneration system in use.	
This credit was scoped out	No cogeneration or trigeneration system in use.	
4.2 Renewable Energy Systems - Solar		0% ⚙ Disabled
	No solar PV renewable energy is in use.	
This credit is disabled	No solar PV renewable energy is in use.	
4.4 Renewable Energy Systems - Other		N/A ✦ Scoped Out
	No other (non-solar PV) renewable energy is in use.	
This credit was scoped out	No other (non-solar PV) renewable energy is in use.	

Stormwater Overall contribution 13.5%

	Minimum required 100%	100%	✔ Pass
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Which stormwater modelling software are you using?:	Melbourne Water STORM tool	
1.1 Stormwater Treatment		100%
Score Contribution	This credit contributes 100% towards the category score.	
Criteria	Has best practice stormwater management been demonstrated?	
Question	STORM score achieved	
Project	100	
Output	Min STORM Score	
Project	100	

IEQ Overall contribution 16.5%

		Minimum required 50%	58% ✔ Pass
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1.4 Daylight Access - Non-Residential		33%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the nominated floor area has at least 2% daylight factor?		
Annotation	Office and meeting areas have been considered in the daylight assessment. Stores, corridors, data halls and other associated non-habitable spaces have been excluded from daylighting requirements.		
Question	Percentage Achieved?		
Office	33 %		
2.3 Ventilation - Non-Residential		66%	✔ Achieved
Score Contribution	This credit contributes 35.3% towards the category score.		
Criteria	What % of the regular use areas are effectively naturally ventilated?		
Question	Percentage Achieved?		
Office	-		
Criteria	What increase in outdoor air is available to regular use areas compared to the minimum required by AS 1668.2:2012?		
Question	Percentage Achieved?		
Office	50 %		
Criteria	What CO2 concentrations are the ventilation systems designed to achieve, to monitor and to maintain?		
Question	Value		
Office	800 ppm		
3.4 Thermal comfort - Shading - Non-Residential		100%	
Score Contribution	This credit contributes 17.6% towards the category score.		
Annotation	Louvre shading detail provided on architectural plans.		
Criteria	What percentage of east, north and west glazing to regular use areas is effectively shaded?		
Question	Percentage Achieved?		
Office	100 %		
3.5 Thermal Comfort - Ceiling Fans - Non-Residential		0%	
Score Contribution	This credit contributes 5.9% towards the category score.		
Criteria	What percentage of regular use areas in tenancies have ceiling fans?		
Question	Percentage Achieved?		
Office	-		

4.1 Air Quality - Non-Residential		100%
Score Contribution	This credit contributes 5.9% towards the category score.	
Criteria	Do all paints, sealants and adhesives meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Office	Yes	
Criteria	Does all carpet meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Office	Yes	
Criteria	Does all engineered wood meet the maximum total indoor pollutant emission limits?	
Question	Criteria Achieved ?	
Office	Yes	

Transport Overall contribution 9.0%

		37%
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1.4 Bicycle Parking - Non-Residential		100%
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Score Contribution	This credit contributes 25% towards the category score.
Criteria	Have the planning scheme requirements for employee bicycle parking been exceeded by at least 50% (or a minimum of 2 where there is no planning scheme requirement)?
Annotation	There are no specific requirements for bicycle parking provisions for Data Centres under clause 52.06 or 52.34.
Question	Criteria Achieved ?
Office	Yes
Question	Bicycle Spaces Provided ?
Office	8

1.5 Bicycle Parking - Non-Residential Visitor		0%
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Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Have the planning scheme requirements for visitor bicycle parking been exceeded by at least 50% (or a minimum of 1 where there is no planning scheme requirement)?
Question	Criteria Achieved ?
Office	No
Question	Bicycle Spaces Provided ?
Office	-

1.6 End of Trip Facilities - Non-Residential		0%
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Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Where adequate bicycle parking has been provided. Is there also: * 1 shower for the first 5 employee bicycle spaces plus 1 to each 10 employee bicycles spaces thereafter, * changing facilities adjacent to showers, and * one secure locker per employee bicycle space in the vicinity of the changing / shower facilities?
Question	Number of showers provided ?
Office	-
Question	Number of lockers provided ?
Office	-
Output	Min Showers Required
Office	1
Output	Min Lockers Required
Office	8

2.1 Electric Vehicle Infrastructure		0%
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Score Contribution	This credit contributes 25% towards the category score.
Criteria	Are facilities provided for the charging of electric vehicles?
Question	Criteria Achieved ?
Project	No

2.2 Car Share Scheme		0%
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Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Has a formal car sharing scheme been integrated into the development?
Question	Criteria Achieved ?
Project	No

2.3 Motorbikes / Mopeds		100%
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Score Contribution	This credit contributes 12.5% towards the category score.
Criteria	Are a minimum of 5% of vehicle parking spaces designed and labelled for motorbikes (must be at least 5 motorbike spaces)?
Annotation	5no. motorbike parking spaces are provided.
Question	Criteria Achieved ?
Project	Yes

Waste Overall contribution 5.5%

	33%
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1.1 - Construction Waste - Building Re-Use		0%
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Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	If the development is on a site that has been previously developed, has at least 30% of the existing building been re-used?
Question	Criteria Achieved ?
Project	No

2.1 - Operational Waste - Food & Garden Waste		0%
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Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are facilities provided for on-site management of food and garden waste?
Question	Criteria Achieved ?
Project	No

2.2 - Operational Waste - Convenience of Recycling		100%
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Score Contribution	This credit contributes 33.3% towards the category score.
Criteria	Are the recycling facilities at least as convenient for occupants as facilities for general waste?
Question	Criteria Achieved ?
Project	Yes

Urban Ecology Overall contribution 5.5%

		12%
<hr/>		
1.1 Communal Spaces		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Is there at least the following amount of common space measured in square meters : * 1m ² for each of the first 50 occupants * Additional 0.5m ² for each occupant between 51 and 250 * Additional 0.25m ² for each occupant above 251?	
Question	Common space provided	
Office	-	
Output	Minimum Common Space Required	
Office	818 m ²	
<hr/>		
2.1 Vegetation		25%
Score Contribution	This credit contributes 50% towards the category score.	
Criteria	How much of the site is covered with vegetation, expressed as a percentage of the total site area?	
Question	Percentage Achieved ?	
Project	8 %	
<hr/>		
2.2 Green Roofs		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Does the development incorporate a green roof?	
Question	Criteria Achieved ?	
Project	No	
<hr/>		
2.3 Green Walls and Facades		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	Does the development incorporate a green wall or green façade?	
Question	Criteria Achieved ?	
Project	No	
<hr/>		
3.2 Food Production - Non-Residential		0%
Score Contribution	This credit contributes 12.5% towards the category score.	
Criteria	What area of space per occupant is dedicated to food production?	
Question	Food Production Area	
Office	-	
Output	Min Food Production Area	
Office	681 m ²	

Innovation Overall contribution 9.0%

	0%
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1.1 Innovation	0%
Score Contribution	This credit contributes 100% towards the category score.
Criteria	What percentage of the Innovation points have been claimed (10 points maximum)?

Disclaimer

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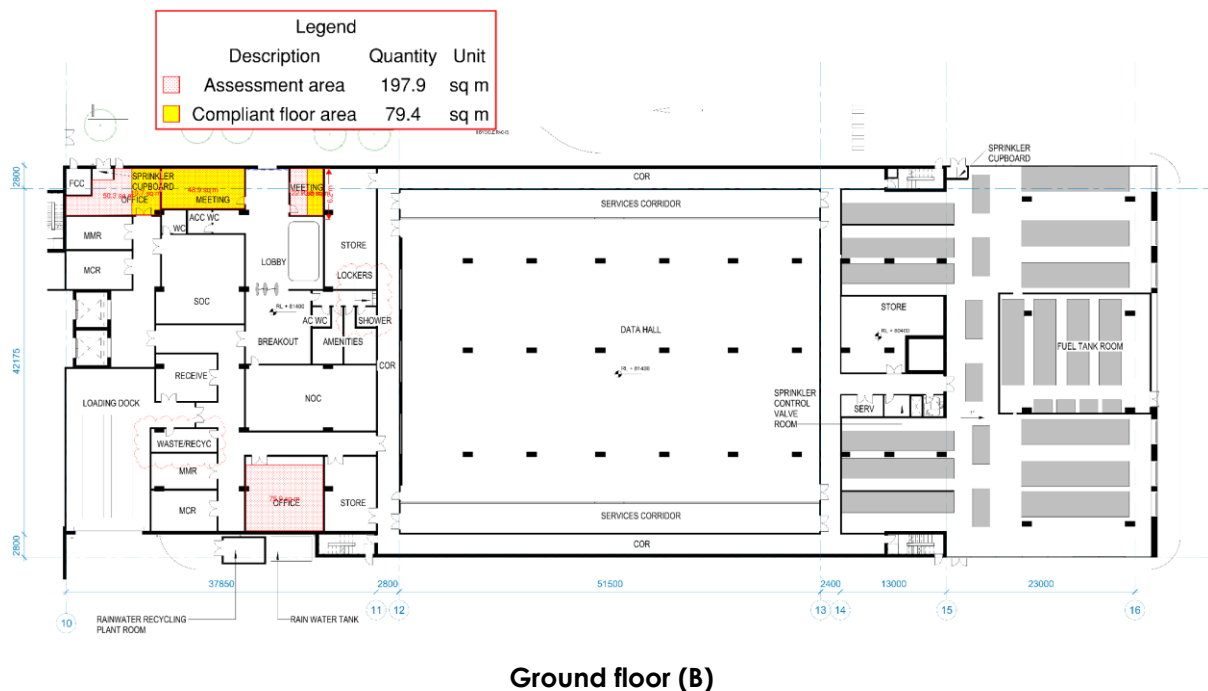
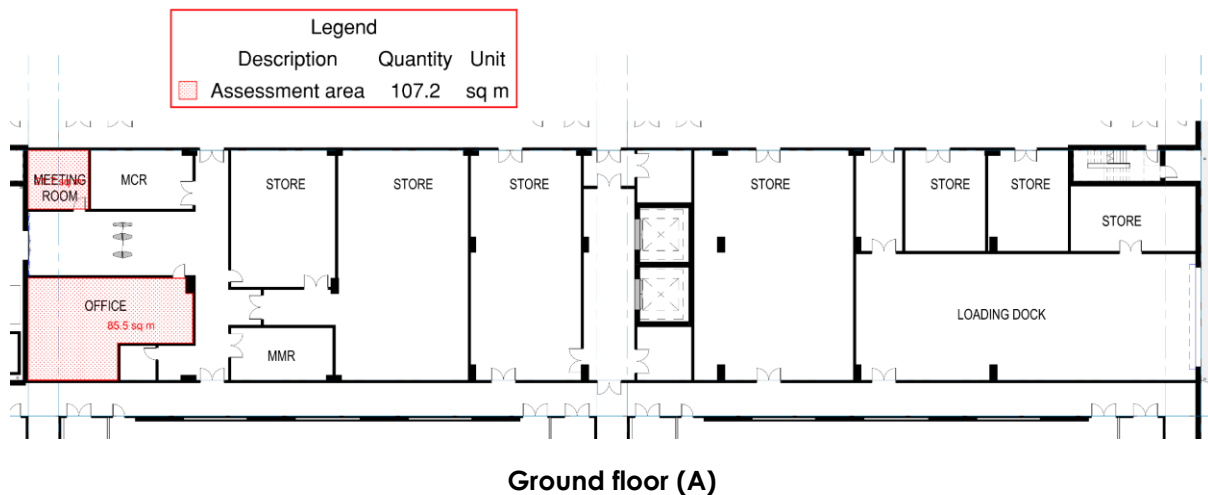
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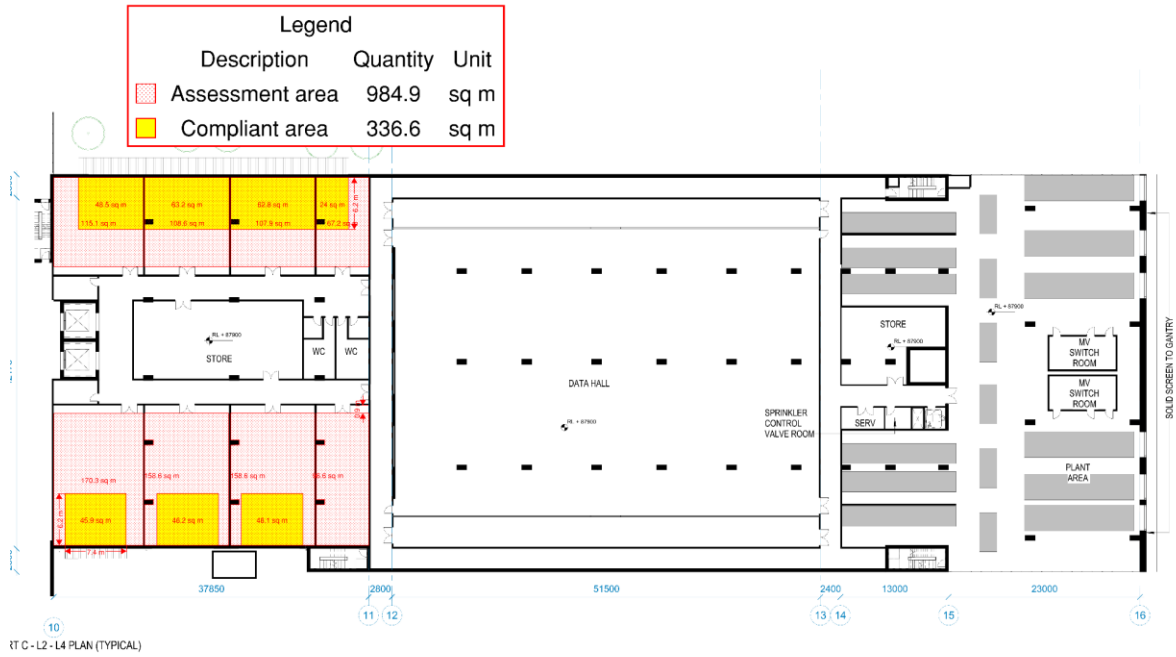
Appendix 2 - Daylight Assessment

The following details the BESS daylight deemed to satisfy compliance outcomes for the development (Per BESS tool notes IEQ 1.4).

Note daylight is not applicable for data centre data halls and associated services areas, and so these spaces have not been included in the BESS assessment. Primary habitable spaces within the office component of the development have maximised daylight access for the required balance of site optimisation, energy efficiency and amenity requirements.

Level	Assessment area (m2)	Compliant Area (m2)	Compliant Area (%)
G	314.4	79.4	25.3%
1, 2, 3	2954.7	1009.8	34.2%
Total	3269.1	1089.2	33.3%





First, second, third floors

Appendix 3 - Integrated Water Management

STORM/MUSIC Report

Refer to civil drainage documentation.

WSUD system maintenance plan

Rainwater Tanks

The following maintenance schedule is to be used as a guide for rainwater tank maintenance. It is based on average maintenance requirements for rainwater tanks in Victoria, and timings may need to be adjusted to suit specific site assets. Regular inspections should be undertaken every three months. Inspection and maintenance of all rainwater tanks will be the responsibility of the building owner/manager.

Refer to the Melbourne Water WSUD Maintenance Guidelines for further details.

Item	What to check for	Action	Frequency
Tank inlet	Tank inlet is not blocked by accumulated debris	Physically remove debris build up	1-3 months
First flush device and filters	First flush device and filters are not blocked, and flow is not limited by litter or sediment accumulation	Physically remove litter and sediment from first flush device, or if it contains a flush-out valve, use water to remove sediment.	1-3 months
Tank outlet	Tank outlet is not restricted by sediment.	Flush tank as required.	1-3 months
Mosquito screens	Mosquito screens are not torn or loose	Replace mosquito screens if necessary. Put screens back carefully, ensuring they are tightly refitted.	1-3 months
Pumps	Water around pump equipment. Water pressure.	Replace seals where leaks are noted. Clean pumps as required to maintain pump pressure. Refer to pump manufacturer's maintenance requirements.	1-3 months
Roof and gutters	Accumulated debris in gutters. Discolouration of tank water, or notable odours.	Physically remove accumulated debris, including leaf and other plant material. More regular maintenance may be required where there are overhanging trees.	3-6 months
Overhanging trees	Vegetation overhanging roof and gutters	Prune overhanging trees where possible to reduce vegetation build up and chance of blockages in tank network.	3-6 months
Tank	Tank defects or damage. Sediment and sludge build up in tank, or sulphide/rotten egg odours.	Replace defect or damaged tank as necessary. Remove accumulated sediment and sludge from tank. Clean tank if required.	2-3 years

Stormwater management during construction

Stormwater management Planning Scheme clauses 19.03-3S and 53.18 (specifically 53.18-06) require measures in place to ensure the protection of drainage infrastructure and receiving waterways during construction.

The following is intended to inform the site management plan in matters relating to stormwater management during construction. Relevant principles per the EPA Civil Construction, Building and Demolition Guide¹, and measures as per Urban Stormwater Best Practice Environmental Management Guidelines Section 6.3 are shown below.

The site management plan should restrict runoff to adjoining properties and ensure minimal earth disturbance occurs during construction. Additionally, building waste, dangerous chemicals and food waste must be managed to prevent damage to flora and fauna, or build up or blockage in drains and nearby creeks.

Item	Potential issues	Control Measure
Fences	Porous fences allow stormwater runoff to carry sediment across the site and discharge into the stormwater network.	Mesh fabric and silt fences to be installed on fences where site includes slopes greater than 1:20. Hay bales may also be suitable for larger sites.
Pit inlets	Without sediment filters, pit inlets allow sediment to enter the stormwater network causing sediment build-up downstream.	Sediment traps or drain filters should be installed on all pit inlets.
Downpipes	Localised flooding due to lack of site drainage.	Temporary downpipes to be installed as soon as roofing is installed to minimise overland flow across the site (see plastic tube roll image below). These should be connected to the rainwater tank where possible, or alternatively the stormwater pipes.
Vehicle traffic on site	Areas of vehicle traffic are subject to disturbance of soil.	Use stabilised vehicle entrances and paths, with crushed rock or other suitable material. Include rumble grates, track mats (where access is over sand), and physically remove mud from tyres of vehicles prior to leaving the site.
Mounded earth	Unsecured mounds create significant issues with sedimentation after rainfall.	Use erosion control blankets for mounded earth. Ensure correct installation, and incorporate secondary measures such as silt fences on steep sites.

¹ EPA Civil Construction, Building and Demolition Guide, Publication 1834 (2020)
<https://www.epa.vic.gov.au/about-epa/publications/1834>

Item	Potential issues	Control Measure
Bins	Where suitable bins are not provided, litter can be washed from the site.	Ensure appropriate bins are provided for construction workers and staff. Ensure bins for lightweight food packaging and construction waste have lids to stop waste blowing away.
Waste material	Pollution of stormwater can occur where appropriate disposal methods for waste materials are not established on site.	Provide separate bins for paints and solvents to allow safe removal and disposal at accredited locations. Ensure all staff are aware of correct disposal methods.
Stockpiles	Incorrect stockpiling can lead to stormwater contamination, and site pollution.	Locate stockpiles away from drainage paths, and construct stockpiles with gentle slopes (max 1:2).

In addition, the contractor will be required to:

- **Identify and document**, prior to construction commencing, where these measures will be installed, and how erosion and loose waste will be managed.
- **Install tarps on site waste bins** every night.
- **Avoid overfilling vehicles** or cover all soil loads being taken offsite.
- **Sweep up the site** every day when works occur on site to ensure loose waste does not blow around the site and into the surrounding streets.
- **Ensure erosion and sediment control measures are maintained** through daily checks – maintenance measures may include removing sediment trapped in filters and topping up gravel on the vehicle entry path.



Figure 2 - Temporary Downpipes



Figure 3 - Sediment Trap

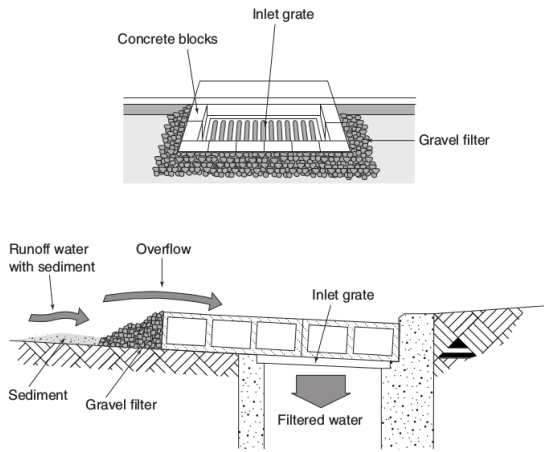


Figure 4 - Block and Gravel Filter (CSIRO)



Figure 5 - Sediment Trap

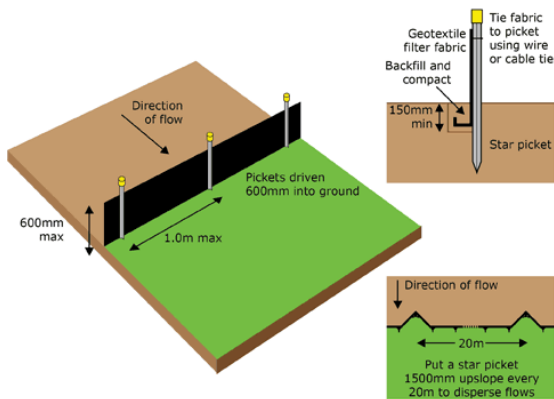


Figure 6 - Silt Fence (EPA 2004, Publication 960 p.30)



Figure 7 - Silt Fence (US EPA 2008)

Appendix 4 - Vegetated Landscape Areas

The following is provided as demonstration of vegetated landscape areas considered in BESS Urban Ecology 2.1.

