



While many senior living facilities offer beautiful settings, their designs rarely incorporate evidence-based design enhancements specifically for those with dementia.

Dolan homes are built specifically for those with Alzheimer's and dementia, filled with helpful living cues, stimulating activities, safety and security measures, and more to make their lives as comfortable and fulfilling as possible. We call this supportive living, and practice it day in and day out at Dolan.

Founder Tim Dolan recalls that when he started in Memory Care over 30 years ago, many families were embarrassed by the illness and felt shame for their loved ones. He believes that people with dementia can maintain their identity and dignity and thrive with the right environment.

We advocate for all caregivers and designers to learn about the best practices from our decades of experience and from researchers to incorporate these design principles into the structure of their home designs and remodels.

The following pages include excerpts from recently published research. We encourage everyone to read the full reports and listen to the interviews at the links below.

<https://www.alzint.org/resource/world-alzheimer-report-2020/>

<https://dta.com.au/resources/environmental-design-resources/>

<https://www.dementiaresearch.org.au/resources/environmental-design-service-and-consultancy-dta/>

<https://www.alzheimers.org.uk/get-involved/dementia-friendly-resources/organisations/dementia-friendly-environment-checklist>



# Volume I





**Alzheimer's Disease  
International**

*The global voice on dementia*

# **World Alzheimer Report 2020**

**Design, Dignity, Dementia:**

**Dementia-related design and the built environment**

**Volume I**



# Little did we know then



- *In the 1970's & 1980's*
- *Professionals in social & psychological sciences and in design*
- *Had no idea that dementia would grow into the world-wide challenge it presents today*
- Mini Mental State Exam (MMSE) – Folstein
- Global Deterioration Scale (GDS) – Reisberg
- Environmental Psychology – Proshansky
- EDRA – Environmental Design Research Association
- Design for Dementia becomes a field of study

# Groundbreaking Projects 1978-1998

Year	Groundbreaking Paradigm Shifters	Principles & approaches the designers / operators explored in this environment
<b>1978</b>	Le Cantou, Rueil-Malmaison, France	Separate small apartment in larger building, continued family involvement
<b>1984</b>	Aldersgate, Felixstowe, SA, Australia	Process innovation; non-institutional quality; redundant cuing
<b>1987</b>	Pepper Tree Lodge, Queanbeyan, AU	Unit for the Confused and Disturbed Elderly (CADE) broke Australia's institutional model
<b>1989</b>	Anton Pieckhofje, Haarlem, NL	'Family scale', central services, differentiated style management
<b>1991</b>	Adards, Warrane, Tasmania	Homelike, accordion design to switch between "family" & "community" scale", lively garden
<b>1991</b>	Woodside Place, Pennsylvania USA	Neighborhoods with joint common space, family scale gardens, innovative details
<b>1995</b>	Hearthstone, Massachusetts USA	"Community scale," central garden, engagement activities at "family" scale
<b>1996</b>	Himawari, Ofenatu Japan	First "family scale" in Japan
<b>1997</b>	Moorside, Winchester UK	Choice through design, unobtrusive care, Seeing and being seen
<b>1998</b>	Hasselknuten, Sweden	In town location, common areas open to the public, normalized life

# Approaches discovered

today common sense / then groundbreaking



- Location in the community
- Family scale neighborhoods,
- Homelike & non-institutional
- Community scale commons
- Public invited into the Bistro
- Gardens full of life
- Engagement all day long
- Redundant cueing
- Resident choice by design
- Naturally mapped
- Seeing and being seen
- Community scale
- Stable staff
- Care that fits into life

TABLE 1: PRINCIPLES, SALUTOGENESIS AND THE CRPD

Salutogenic conditions				Convention on the Rights of Persons with Disabilities						
Manageable	Comprehensible	Meaningful	Design Principles	Dignity, individual autonomy	Non-discrimination	Full participation and inclusion	Respect	Equality of opportunity	Accessibility	Equality between men and women
x			Unobtrusively reduce risks	x	x	x	x	x	x	
x			Provide a human scale	x		x	x	x		
	x		Allow people to see and be seen	x		x	x	x	x	
x			Reduce unhelpful stimulation	x		x	x	x	x	
x			Optimise helpful stimulation	x		x	x	x	x	
		x	Support movement and engagement	x	x	x	x	x	x	x
	x		Create a familiar place	x	x	x	x	x		x
x			Provide opportunities to be alone or with others	x	x	x	x	x		x
		x	Link to the community	x	x	x	x	x	x	x
		x	Design in response to vision for way of life	x	x	x	x	x	x	x

This illustrates, for example, that optimising helpful stimulation contributes to achieving the overarching goals by contributing to the salutogenic condition of manageability and the CRPD principles of individual autonomy, full participation and inclusion, respect, equality of opportunity and accessibility. More links between the principles and the CRPD are illustrated in Table 2.

TABLE 2: FLEMING-BENNETT PRINCIPLES &amp; CPRD

Fleming-Bennett principles	The environment ...	CPRD reference
1. Unobtrusively reduce risks	<ul style="list-style-type: none"> <li>- enables a person to continue to pursue way of life</li> <li>- enables a person to make the most of her/his abilities</li> <li>- is easy to move around internal and external built environment</li> <li>- has any potential risks made unobtrusive</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility
2. Provide a human scale	<ul style="list-style-type: none"> <li>- has positive affect on a person's responses and feelings</li> <li>- does not intimidate people</li> <li>- encourages a sense of well being</li> <li>- enhances a person's competence</li> </ul>	a) Dignity, individual autonomy c) Full participation and inclusion d) Respect e) Equality of opportunity
3. Allow people to see and be seen	<ul style="list-style-type: none"> <li>- enables a person to make choices</li> <li>- minimises confusion</li> <li>- offers opportunities for engagement</li> <li>- enables a person to be confident to explore the built environment</li> </ul>	a) Dignity, individual autonomy c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility
4. Reduce unhelpful stimulation	<ul style="list-style-type: none"> <li>- reduces causes of stress such as competing noises, visual clutter</li> <li>- avoids prolonged exposure to large amounts of stimulation</li> <li>- minimises a person's exposure to stimuli that are not specifically helpful to her/him</li> </ul>	a) Dignity, individual autonomy c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility
5. Optimise helpful stimulation	<ul style="list-style-type: none"> <li>- enables a person to see, hear, touch and smell cues</li> <li>- gives a person cues about where she/he is</li> <li>- gives a person cues about what she/he can do</li> <li>- minimises a person's confusion and uncertainty</li> </ul>	a) Dignity, individual autonomy c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility
6. Support movement and engagement	<ul style="list-style-type: none"> <li>- increases a person's engagement</li> <li>- maintains a person's health and wellbeing</li> <li>- has paths free of obstacles</li> <li>- includes points of interest</li> <li>- provides opportunities for activities and/or social interaction</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility g) Equality between men and women



TABLE 2: CONTINUED

Fleming-Bennett principles	The environment ...	CPRD reference
7. Create a familiar place	<ul style="list-style-type: none"> <li>- has places a person can use and enjoy</li> <li>- reflects a person's personal background</li> <li>- involves a person in personalising the built environment</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity g) Equality between men and women
8. Provide opportunities to be alone or with others	<ul style="list-style-type: none"> <li>- enables a person to choose to be with others or on their own</li> <li>- enables a person to engage in relevant activity</li> <li>- has a variety of places which have different characters (e.g. place for reading, place for chatting)</li> <li>- includes internal and external settings</li> <li>- stimulates different emotional responses</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity g) Equality between men and women
9. Link to the community	<ul style="list-style-type: none"> <li>- reminds a person who she/he is and maintains her/his sense of identity</li> <li>- includes places that are shared by the wider community and people living with dementia</li> <li>- has easy access to these places and around a site</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility g) Equality between men and women
10. Design in response to vision for way of life	<ul style="list-style-type: none"> <li>- supports the chosen lifestyle</li> <li>- has a way of life that is clearly evident to everyone</li> <li>- in aged care, reminds staff of values and practices that are required and gives them the tools to do their job</li> </ul>	a) Dignity, individual autonomy b) Non-discrimination c) Full participation and inclusion d) Respect e) Equality of opportunity f) Accessibility g) Equality between men and women

TABLE 3: INTERRELATIONSHIP BETWEEN FLEMING-BENNETT PRINCIPLES &amp; ZEISEL APPROACHES

	Exit control	Walking paths	Common spaces	Unit privacy	Outdoor access	Homelike	Sensory comprehension	Independence support
1. Unobtrusively reduce risks	x		x		x	x	x	x
2. Provide a human scale			x	x		x		
3. Allow people to see and be seen	x	x						
4. Reduce unhelpful stimulation	x	x	x			x	x	
5. Optimise helpful stimulation	x	x	x	x	x	x	x	
6. Support movement and engagement	x	x		x	x	x		x
7. Create a familiar place		x	x	x		x	x	
8. Provide opportunities to be alone or with others		x	x	x	x			
9. Link to the community						x		
10. Design in response to vision for way of life	x	x	x	x	x	x	x	x

TABLE 4: ZEISEL APPROACHES VS FLEMING-BENNETT PRINCIPLES

Zeisel approaches	Key points [17]	Fleming-Bennett principles
Exit control	<ul style="list-style-type: none"> <li>- Controlled exits allow for independence</li> <li>- Doors to dangerous places to be less inviting and as invisible as possible or camouflaged</li> <li>- Doors to safe places (e.g. interior courtyard) to be as inviting as possible</li> <li>- Use doors with see through panes to invite view to safe places</li> <li>- Windows whose openings need to be controlled to be less inviting and as invisible as possible or camouflaged</li> <li>- Fences around gardens to be as invisible as possible or camouflaged</li> <li>- Well designed exit controls on doors, windows and garden fences encourage resident independence</li> <li>- Provide meaningful and creative activities within circumscribed world</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>3. Allow people to see and be seen</li> <li>4. Reduce unhelpful stimulation</li> <li>5. Optimise helpful stimulation</li> <li>6. Support movement and engagement</li> <li>10. Design in response to vision for way of life</li> </ol>
Walking paths	<ul style="list-style-type: none"> <li>- Clear walking paths clarify destinations</li> <li>- People can see where they are going</li> <li>- Avoid circular paths which prevent seeing a destination</li> <li>- Include objects that are familiar to people</li> <li>- Provide evident destinations</li> <li>- Use landmarks to mark key points along the journey</li> <li>- Provide places along paths to enable purposeful walking</li> </ul>	<ol style="list-style-type: none"> <li>3. Allow people to see and be seen</li> <li>4. Reduce unhelpful stimulation</li> <li>5. Optimise helpful stimulation</li> <li>6. Support movement and engagement</li> <li>7. Create a familiar place</li> <li>8. Provide opportunities to be alone or with others</li> <li>10. Design in response to vision for way of life</li> </ol>
Common spaces	<ul style="list-style-type: none"> <li>- Room purposes indicators improve behaviour</li> <li>- Rooms reflect different intended uses</li> <li>- Provide clearly understood environmental cues</li> <li>- Pay attention to scale of space, furniture, features and fixtures</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>2. Provide a human scale</li> <li>4. Reduce unhelpful stimulation</li> <li>5. Optimise helpful stimulation</li> <li>7. Create a familiar place</li> <li>8. Provide opportunities to be alone or with others</li> <li>10. Design in response to vision for way of life</li> </ol>
Unit privacy	<ul style="list-style-type: none"> <li>- Bedroom needs to be a sanctuary</li> <li>- Bedroom needs to offer privacy</li> <li>- People need to be able to personalise their bedroom</li> <li>- Personal cues and hints as to a person's past should surround resident</li> <li>- Encourage a person to express their wishes and desires directly</li> </ul>	<ol style="list-style-type: none"> <li>2. Provide a human scale</li> <li>5. Optimise helpful stimulation</li> <li>6. Support movement and engagement</li> <li>7. Create a familiar place</li> <li>8. Provide opportunities to be alone or with others</li> <li>10. Design in response to vision for way of life</li> </ol>
Outdoor access	<ul style="list-style-type: none"> <li>- Gardens must be safe and easily accessible</li> <li>- Outdoor areas need to be safe, have engaging elements, walking path and be secure from potential public danger beyond the garden</li> <li>- Gardens are another common area</li> <li>- Create an outdoor people can use independently</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>5. Optimise helpful stimulation</li> <li>6. Support movement and engagement</li> <li>8. Provide opportunities to be alone or with others</li> <li>10. Design in response to vision for way of life</li> </ol>

TABLE 4: CONTINUED

Zeisel approaches	Key points [17]	Fleming-Bennett principles
Homelike	<ul style="list-style-type: none"> <li>- A sense of home is key to comfort for residents and family</li> <li>- People can display their own objects and mementos</li> <li>- Rooms are the scale of those in a house</li> <li>- Needs to look like a home from outside</li> <li>- A person can find things to do</li> <li>- Residential furnishings and design features</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>2. Provide a human scale</li> <li>4. Reduce unhelpful stimulation</li> <li>5. Optimise helpful stimulation</li> <li>6. Support movement and engagement</li> <li>7. Create a familiar place</li> <li>9. Link to the community</li> <li>10. Design in response to vision for way of life</li> </ol>
Sensory comprehension	<ul style="list-style-type: none"> <li>- Residents take cues from sensory details they comprehend</li> <li>- What residents see, hear and touch must be comprehensible to them</li> <li>- Environmental messages need to be coherent to all the sense at once</li> <li>- Use the environment to help people develop a coherent picture of their life</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>4. Reduce unhelpful stimulation</li> <li>5. Optimise helpful stimulation</li> <li>7. Create a familiar place</li> <li>10. Design in response to vision for way of life</li> </ol>
Independence support	<ul style="list-style-type: none"> <li>- Supporting independence helps retain it</li> <li>- Support each individual to use the capacity they have</li> </ul>	<ol style="list-style-type: none"> <li>1. Unobtrusively reduce risks</li> <li>6. Support movement and engagement</li> <li>10. Design in response to vision for way of life</li> </ol>

TABLE 6: COMPARISON OF F-B PRINCIPLES WITH PRINCIPLES DESCRIBED IN TEN KEY BOOKS

Fleming Bennett Principle	Calkins 1988	Cohen & Weisman 1991	Brawley 1997	Marshall (Marshall) 1998	Judd (Marshall) 1998	Phippen (Marshall) 1998	Regnier & Pynoos (Regnier) 2002
1. Unobtrusively reduce risks	<ul style="list-style-type: none"> <li>- Maximise independence in ADL</li> <li>- Wayfinding/Orientation</li> <li>- Safety and Security</li> <li>- Competence in Daily Activities</li> <li>- Prosthetic support</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure safety and security</li> <li>- Maximise autonomy and control</li> <li>- Adapt to changing needs</li> </ul>	<ul style="list-style-type: none"> <li>- Ensure safety and security</li> <li>- Maximise autonomy and control</li> <li>- Adapt to changing needs</li> </ul>	<ul style="list-style-type: none"> <li>- Compensate for disability</li> <li>- Maximise independence</li> <li>- Enhance self-esteem &amp; confidence</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem, autonomy and individuality</li> <li>- Safety</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-kitchens</li> </ul>	<ul style="list-style-type: none"> <li>- Control, Choice/Autonomy</li> <li>- Safety/Security</li> <li>- Accessibility and Functioning</li> <li>- Adaptability</li> </ul>
2. Provide a human scale	<ul style="list-style-type: none"> <li>- Spaces for groups</li> <li>- Wayfinding/Orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> <li>- Protect the need for privacy</li> </ul>	<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> <li>- Protect the need for privacy</li> </ul>	<ul style="list-style-type: none"> <li>- Reinforce personal identity</li> </ul>	<ul style="list-style-type: none"> <li>- Small</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-entrances, dining arrangements</li> <li>- Interior planning and design</li> </ul>	<ul style="list-style-type: none"> <li>- Familiarity</li> <li>- Aesthetics and Appearance</li> </ul>
3. Allow people to see and be seen	<ul style="list-style-type: none"> <li>- Wayfinding/Orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Enhancement of visual access</li> </ul>	<ul style="list-style-type: none"> <li>- Legible</li> </ul>	<ul style="list-style-type: none"> <li>- Night-time cover and servicing</li> </ul>	<ul style="list-style-type: none"> <li>- Orientation/Wayfinding</li> </ul>
4. Reduce unhelpful stimulation	<ul style="list-style-type: none"> <li>- Control noxious stimuli</li> <li>- Wayfinding/Orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Control of stimuli</li> </ul>	<ul style="list-style-type: none"> <li>- Legible</li> </ul>	<ul style="list-style-type: none"> <li>- Night-time cover and servicing</li> </ul>	<ul style="list-style-type: none"> <li>- Orientation/Wayfinding</li> <li>- Sensory Aspects</li> </ul>
5. Optimise helpful stimulation	<ul style="list-style-type: none"> <li>- Compensate for sensory losses</li> <li>- Wayfinding/Orientation</li> <li>- Personalisation</li> </ul>	<ul style="list-style-type: none"> <li>- Provide opportunities for stimulation and change</li> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Provide opportunities for stimulation and change</li> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Orientating and understandable</li> <li>- Control of stimuli</li> </ul>	<ul style="list-style-type: none"> <li>- Legible</li> </ul>	<ul style="list-style-type: none"> <li>- Night-time cover and servicing</li> <li>- Cueing</li> </ul>	<ul style="list-style-type: none"> <li>- Orientation/Wayfinding</li> <li>- Stimulation/Challenge</li> <li>- Sensory Aspects</li> </ul>
6. Support movement and engagement	<ul style="list-style-type: none"> <li>- Natural outlets (exercise, fresh air)</li> <li>- Wayfinding/Orientation</li> <li>- Privacy and Socialization</li> <li>- Safety and Security</li> </ul>	<ul style="list-style-type: none"> <li>- Support functional ability through meaningful activity</li> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Support functional ability through meaningful activity</li> <li>- Maximise awareness and orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise independence</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem, autonomy and individuality-Safety</li> </ul>	<ul style="list-style-type: none"> <li>- Outside spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Stimulation/Challenge</li> </ul>
7. Create a familiar place	<ul style="list-style-type: none"> <li>- Cues props to connect to past</li> <li>- Personalisation</li> </ul>	<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> </ul>	<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> <li>- Encourage family involvement</li> </ul>	<ul style="list-style-type: none"> <li>- Reinforce personal identity</li> </ul>	<ul style="list-style-type: none"> <li>- Familiar</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-personal space</li> <li>- Interior planning and design</li> </ul>	<ul style="list-style-type: none"> <li>- Familiarity</li> <li>- Aesthetics and Appearance</li> <li>- Personalization</li> </ul>
8. Provide opportunities to be alone or with others	<ul style="list-style-type: none"> <li>- Interact with families and friends</li> <li>- Privacy and Socialization</li> </ul>	<ul style="list-style-type: none"> <li>- Provide opportunities for stimulation and change</li> <li>- Provide opportunities for socialization</li> <li>- Protect the need for privacy</li> </ul>	<ul style="list-style-type: none"> <li>- Provide opportunities for stimulation and change</li> <li>- Provide opportunities for socialization</li> <li>- Protect the need for privacy</li> <li>- Encourage family involvement</li> </ul>	<ul style="list-style-type: none"> <li>- Welcome relatives and the local community</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem, autonomy and individuality</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-provision of shared spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Privacy</li> <li>- Social Interaction</li> </ul>
9. Link to the community		<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> </ul>	<ul style="list-style-type: none"> <li>- Establish links to the healthy and familiar</li> <li>- Encourage family involvement</li> </ul>	<ul style="list-style-type: none"> <li>- Welcome relatives and the local community</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem, autonomy and individuality</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-siting</li> </ul>	<ul style="list-style-type: none"> <li>- Aesthetics and Appearance</li> </ul>
10. Design in response to vision for way of life	<ul style="list-style-type: none"> <li>- Cues props to connect to past</li> <li>- Personalisation</li> <li>- Competence in Daily Activities</li> </ul>	<ul style="list-style-type: none"> <li>- Support functional ability through meaningful activity</li> <li>- Maximise autonomy and control</li> </ul>	<ul style="list-style-type: none"> <li>- Support functional ability through meaningful activity</li> <li>- Maximise autonomy and control</li> <li>- Encourage family involvement</li> </ul>	<ul style="list-style-type: none"> <li>- Maximise independence</li> <li>- Enhance self-esteem &amp; confidence</li> </ul>	<ul style="list-style-type: none"> <li>- Self-esteem, autonomy and individuality</li> </ul>	<ul style="list-style-type: none"> <li>- Domestic characteristics-kitchens</li> </ul>	<ul style="list-style-type: none"> <li>- Privacy</li> <li>- Control, Choice/Autonomy</li> <li>- Personalization</li> </ul>
Not part of 1–10	Nil	Nil	Nil	- Care for staff	Nil	Nil	- Adaptability



TABLE 6: CONTINUED

Fleming Bennett Principle	Moore Geboy & Weisman 2006	Cooper Marcus & Sachs 2014	Fung 2015	Grey, Pierce, Cahill & Dyer 2015	Halsall & McDonald 20??
1. Unobtrusively reduce risks	<ul style="list-style-type: none"> <li>- Safety and security</li> <li>- Functional independence</li> <li>- Meaningful activity</li> <li>- Continuity of the self</li> </ul>	<ul style="list-style-type: none"> <li>- Address attitudes of residents to nature and outdoors</li> <li>- Ensure garden is attractive and well maintained</li> <li>- Building edge encloses garden or boundary provides complete (screened) enclosure</li> </ul>	<ul style="list-style-type: none"> <li>- Wayfinding</li> <li>- Mobility</li> <li>- Safety &amp; Security</li> <li>- Fall avoidance</li> </ul>	<ul style="list-style-type: none"> <li>- Personalisation</li> <li>- Unobtrusive safety measures and appropriate technology</li> <li>- Safe and accessible outdoor spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> <li>- Accessibility</li> <li>- Safety</li> </ul>
2. Provide a human scale	<ul style="list-style-type: none"> <li>- Orientation</li> </ul>		<ul style="list-style-type: none"> <li>- Placemaking</li> </ul>	<ul style="list-style-type: none"> <li>- Familiar design</li> </ul>	<ul style="list-style-type: none"> <li>- Comfortable and Stimulating Environments</li> </ul>
3. Allow people to see and be seen	<ul style="list-style-type: none"> <li>- Orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Garden to be clearly visible from inside the building</li> <li>- Visual contact from a staff area</li> <li>- All parts of garden visible</li> <li>- Clear garden layout</li> </ul>	<ul style="list-style-type: none"> <li>- Space and programme</li> </ul>	<ul style="list-style-type: none"> <li>- Good visual access</li> </ul>	<ul style="list-style-type: none"> <li>- Legibility</li> <li>- Safety</li> </ul>
4. Reduce unhelpful stimulation	<ul style="list-style-type: none"> <li>- Sensory stimulation</li> </ul>	<ul style="list-style-type: none"> <li>- Locate garden so only shadow is large from building (not trees)</li> </ul>	<ul style="list-style-type: none"> <li>- Human factors</li> <li>- Visual perception</li> <li>- Environmental stressors</li> </ul>	<ul style="list-style-type: none"> <li>- An environment that is easy to interpret and calm</li> </ul>	<ul style="list-style-type: none"> <li>- Comfortable and Stimulating Environments</li> </ul>
5. Optimise helpful stimulation	<ul style="list-style-type: none"> <li>- Orientation</li> <li>- Sensory stimulation</li> <li>- Architectural delight</li> </ul>	<ul style="list-style-type: none"> <li>- Provide features that might evoke memories</li> </ul>	<ul style="list-style-type: none"> <li>- Placemaking</li> <li>- Wayfinding</li> <li>- Visual perception</li> <li>- Sensory stimuli</li> </ul>	<ul style="list-style-type: none"> <li>- Familiar design</li> <li>- An environment that is easy to interpret and calm</li> <li>- Distinct places</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> <li>- Legibility</li> <li>- Comfortable and Stimulating Environments</li> <li>- Familiarity</li> </ul>
6. Support movement and engagement	<ul style="list-style-type: none"> <li>- Personal control</li> <li>- Architectural delight</li> </ul>	<ul style="list-style-type: none"> <li>- All parts of garden visible</li> <li>- Address attitudes of residents to nature and outdoors</li> <li>- Locate garden for optimal morning use</li> <li>- Locate garden so only shadow is large from building (not trees)</li> <li>- Provide shade</li> <li>- Clear garden layout</li> <li>- Appropriate destination points</li> </ul>	<ul style="list-style-type: none"> <li>- Wayfinding</li> <li>- Outdoor spaces</li> <li>- Placemaking</li> <li>- Fall avoidance</li> </ul>	<ul style="list-style-type: none"> <li>- Distinct spaces</li> <li>- Safe and accessible outdoor spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> <li>- Legibility</li> <li>- Comfortable and Stimulating Environments</li> <li>- Safety</li> <li>- Safe and accessible outdoor spaces</li> </ul>
7. Create a familiar place	<ul style="list-style-type: none"> <li>- Privacy</li> <li>- Continuity of the self</li> </ul>	<ul style="list-style-type: none"> <li>- Provide features that might evoke memories</li> <li>- Look like a domestic garden</li> </ul>	<ul style="list-style-type: none"> <li>- Placemaking</li> </ul>	<ul style="list-style-type: none"> <li>- Familiar design</li> <li>- Personalisation</li> <li>- Distinct spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Familiarity</li> <li>- Distinctive Environments</li> </ul>
8. Provide opportunities to be alone or with others	<ul style="list-style-type: none"> <li>- Orientation</li> <li>- Social interaction</li> <li>- Privacy</li> <li>- Personal control</li> <li>- Architectural delight</li> </ul>	<ul style="list-style-type: none"> <li>- Appropriate destination points</li> <li>- Garden spaces at front and back of building</li> </ul>	<ul style="list-style-type: none"> <li>- Placemaking</li> <li>- Space and programme</li> </ul>	<ul style="list-style-type: none"> <li>- Distinct spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> <li>- Comfortable and Stimulating Environments</li> <li>- Safety</li> </ul>
9. Link to the community	<ul style="list-style-type: none"> <li>- Continuity of the self</li> </ul>		<ul style="list-style-type: none"> <li>- Mobility</li> <li>- Outdoor spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Familiar design</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> </ul>
10. Design in response to vision for way of life	<ul style="list-style-type: none"> <li>- Meaningful activity</li> <li>- Social interaction</li> <li>- Personal control</li> <li>- Continuity of the self</li> </ul>	<ul style="list-style-type: none"> <li>- Address attitudes of residents to nature and outdoors</li> <li>- Provide plenty of choice</li> </ul>	<ul style="list-style-type: none"> <li>- Mobility</li> </ul>	<ul style="list-style-type: none"> <li>- Distinct spaces</li> <li>- Safe and accessible outdoor spaces</li> </ul>	<ul style="list-style-type: none"> <li>- Distinctive Environments</li> </ul>
Not part of 1–10	<ul style="list-style-type: none"> <li>- Spirituality</li> </ul>	<ul style="list-style-type: none"> <li>- Involve management and staff in design of garden</li> <li>- Address attitudes of residents to nature and outdoors</li> </ul>	Nil	<ul style="list-style-type: none"> <li>- Participatory design</li> </ul>	Nil

TABLE 7: COMPARISON OF F-B PRINCIPLES WITH PRINCIPLES DESCRIBED IN SEVEN KEY ARTICLES

Fleming Bennett Principle	Lawton, Fulcomer & Kleban 1984	Hyde 1989	Schiff 1990	Gitlin, Liebman & Winter 2003
1. Unobtrusively reduce risks	<ul style="list-style-type: none"> <li>- Increase autonomy in performing ADL's</li> <li>- To increase meaningful use of time</li> </ul>	<ul style="list-style-type: none"> <li>- Compensate for cognitive and sensory deficits</li> <li>- sense of mastery within the environment and in the basic activities of daily living</li> <li>- Maintain physical health and safety</li> </ul>	<ul style="list-style-type: none"> <li>- Be stable and familiar</li> <li>- Support reality orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce complexity by relaxing rules and expectations and minimising distractions</li> </ul>
2. Provide a human scale		<ul style="list-style-type: none"> <li>- Enhance the quality of life, including the use of leisure time, and interpersonal relationships</li> <li>- Reduce tension, agitation, and problem behaviours</li> </ul>	<ul style="list-style-type: none"> <li>- Be clear and well structured</li> <li>- Be stable and familiar</li> </ul>	<ul style="list-style-type: none"> <li>- Provide predictability, familiarity and structure</li> </ul>
3. Allow people to see and be seen		<ul style="list-style-type: none"> <li>- Compensate for cognitive and sensory deficits</li> <li>- Sense of mastery within the environment and in the basic activities of daily living</li> </ul>	<ul style="list-style-type: none"> <li>- Be clear and well structured</li> <li>- Serve as a cue to memory</li> </ul>	<ul style="list-style-type: none"> <li>- Increase orientation and awareness</li> </ul>
4. Reduce unhelpful stimulation	<ul style="list-style-type: none"> <li>- Enhance sensory functioning</li> <li>- Enhance cognitive functions-specifically memory orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Compensate for cognitive and sensory deficits</li> <li>- Sense of mastery within the environment and in the basic activities of daily living</li> <li>- Reduce tension, agitation, and problem behaviours</li> </ul>	<ul style="list-style-type: none"> <li>- Be clear and well structured</li> <li>- Serve as a cue to memory</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce complexity by relaxing rules and expectations and minimising distractions</li> <li>- Increase orientation and awareness</li> <li>- Create a low stimulus, comfortable environment</li> </ul>
5. Optimise helpful stimulation	<ul style="list-style-type: none"> <li>- Enhance sensory functioning</li> <li>- Enhance cognitive functions-specifically memory orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Compensate for cognitive and sensory deficits</li> <li>- Sense of mastery within the environment and in the basic activities of daily living</li> <li>- Reduce tension, agitation, and problem behaviours</li> </ul>	<ul style="list-style-type: none"> <li>- Serve as a cue to memory</li> </ul>	<ul style="list-style-type: none"> <li>- Increase orientation and awareness</li> <li>- create a low stimulus, comfortable environment</li> </ul>
6. Support movement and engagement	<ul style="list-style-type: none"> <li>- Enhance cognitive functions-specifically memory orientation</li> <li>- To increase meaningful use of time</li> </ul>	<ul style="list-style-type: none"> <li>- Compensate for cognitive and sensory deficits</li> <li>- Sense of mastery within the environment and in the basic activities of daily living</li> <li>- Enhance the quality of life, including the use of leisure time, and interpersonal relationships</li> <li>- Reduce tension, agitation, and problem behaviours</li> <li>- Maintain physical health and safety</li> </ul>	<ul style="list-style-type: none"> <li>- Be clear and well structured</li> </ul>	<ul style="list-style-type: none"> <li>- Reduce complexity by relaxing rules and expectations and minimising distractions</li> <li>- Increase orientation and awareness</li> </ul>
7. Create a familiar place	<ul style="list-style-type: none"> <li>- To increase meaningful use of time</li> </ul>	<ul style="list-style-type: none"> <li>- Enhance the quality of life, including the use of leisure time, and interpersonal relationships</li> </ul>	<ul style="list-style-type: none"> <li>- Be stable and familiar</li> <li>- Serve as a cue to behaviour</li> <li>- Serve as a cue to memory</li> </ul>	<ul style="list-style-type: none"> <li>- Increase orientation and awareness</li> <li>- Provide predictability, familiarity and structure</li> </ul>
8. Provide opportunities to be alone or with others	<ul style="list-style-type: none"> <li>- To increase meaningful use of time</li> <li>- To increase social interactive behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- enhance the quality of life, including the use of leisure time, and interpersonal relationships</li> <li>- Reduce tension, agitation, and problem behaviours</li> </ul>	<ul style="list-style-type: none"> <li>- Be clear and well structured</li> <li>- Serve as a cue to behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- Provide predictability, familiarity and structure</li> </ul>
9. Link to the community	<ul style="list-style-type: none"> <li>- Enhance the sense of self</li> </ul>			
10. Design in response to vision for way of life	<ul style="list-style-type: none"> <li>- Increase autonomy in performing ADL's</li> <li>- To increase meaningful use of time</li> <li>- enhance the sense of self</li> </ul>	<ul style="list-style-type: none"> <li>- Sense of mastery within the environment and in the basic activities of daily living</li> <li>- Enhance the quality of life, including the use of leisure time, and interpersonal relationships</li> </ul>	<ul style="list-style-type: none"> <li>- Be stable and familiar</li> <li>- Serve as a cue to behaviour</li> <li>- Support reality orientation</li> </ul>	<ul style="list-style-type: none"> <li>- Provide predictability, familiarity and structure</li> </ul>
Not part of 1–10		<ul style="list-style-type: none"> <li>- Create an environment that allows staff to work competently and communicate effectively with patients, family, and each other</li> <li>- Meet state and federal life safety and other codes</li> </ul>	Nil	

TABLE 7: CONTINUED

Fleming Bennett Principle	Marquardt & Schmieg 2009	Chaudbury 2017	Calkins 2018
1. Unobtrusively reduce risks	- Autonomy	- Maximise safety and security - Support functional abilities	- Support courtesy, concern and safety
2. Provide a human scale	- Legibility - Familiarity	- Provision of privacy	- Create a sense of community - Enhance comfort and dignity - Opportunities for meaningful engagement
3. Allow people to see and be seen	- Autonomy	- Maximise awareness and orientation	- Enhance comfort and dignity - Support courtesy, concern and safety
4. Reduce unhelpful stimulation	- Autonomy - Sensory stimulation	- Maximise awareness and orientation - Regulation and quality of stimulation	- Create a sense of community - Enhance comfort and dignity
5. Optimise helpful stimulation	- Legibility - Autonomy - Sensory stimulation	- Maximise awareness and orientation - Regulation and quality of stimulation	- Create a sense of community - Enhance comfort and dignity
6. Support movement and engagement	- Legibility - Autonomy - Sensory stimulation	- Support functional abilities	- Enhance comfort and dignity - Support courtesy, concern and safety - Provide opportunities for choice - Opportunities for meaningful engagement
7. Create a familiar place	- Legibility - Familiarity - Social interaction	- Provision of privacy - Opportunities for personal control	- Enhance comfort and dignity
8. Provide opportunities to be alone or with others	- Legibility - Familiarity - Social interaction	- Facilitation of social contact - Provision of privacy	- Create a sense of community - Provide opportunities for choice - Opportunities for meaningful engagement
9. Link to the community	- Social interaction	- Facilitation of social contact	- Create a sense of community - Provide opportunities for choice
10. Design in response to vision for way of life	- Legibility - Familiarity - Social interaction	- Support functional abilities	- Enhance comfort and dignity - Support courtesy, concern and safety - Provide opportunities for choice - Opportunities for meaningful engagement
Not part of 1–10			