A guide to building

UNIVERSALLY ACCESSIBLE

BIRD HIDES

Ernst Retief 2013
With over 850 species, South Africa has a remarkable diversity of birds. These birds are observed and appreciated by a growing community of birdwatchers, both local and international. Birdwatching in South Africa contributes significantly to our country’s economy, realising an estimated R1 billion per annum as determined during a recent Department of Trade and Industry study.

BirdLife South Africa actively promotes avitourism, through the development of birding routes, the training of community bird guides, the marketing of birdwatching at local and international events, and the maintenance of a birding website. Birds open people's eyes to the natural world and birdwatchers often become citizen scientists or amateur wildlife photographers, and many develop an interest in other aspects of our country’s magnificent biodiversity.

In order to promote birdwatching, BirdLife South Africa realises that facilities such as hides and boardwalks are needed. Not only do these allow people to get close to birds, thus allowing the viewing of secretive species and providing bird photography opportunities, but they ensure that the impact on the environment, for example through limiting access across sensitive wetland habitats, is minimised.

It is important for bird hides to be carefully designed, properly constructed and well maintained. Unfortunately, this is not always the case and some hides have been poorly planned and built, and despite original good intentions often fall into disrepair. Sadly, many hides are also not accessible to everyone, such as to people who are visually impaired, in wheelchairs, or the elderly who have difficulty walking.

This excellent report, which has been painstakingly researched and compiled by Ernst Retief over many months, seeks to not only provide the definitive guide to hide design, but very importantly to provide guidelines on how to construct universally accessible bird hides and boardwalks.

For this work, Ernst Retief is congratulated. The FirstRand Foundation and the Rand Merchant Bank Fund is thanked for the financial contributions to this project and also for making BirdLife South Africa aware of the important issue of accessibility.

Mark D. Anderson
Chief Executive Officer
BirdLife South Africa
Acknowledgements

A number of people contributed to the successful completion of this project. I have received input from photographers, people in the construction industry, birdwatchers who use hides on a regular basis, architects, and colleagues at BirdLife South Africa. Thank you very much to all of these people for your contributions.

A word of special appreciation must go to the FirstRand Foundation and the Rand Merchant Bank Fund, who initially asked BirdLife South Africa to look at ways to make birding facilities more universally accessible, and provided the funding for the compilation of this document and for the construction of a bird hide at Moreletakloof Nature Reserve in Pretoria. Rand Merchant Bank also funds my position as Regional Conservation Manager: Gauteng and Limpopo. Thank you to Ian Slade from Tshikululu Social Investments for his assistance and advice.

An audit of bird hides in Gauteng in 2012 indicated that, with better planning, many hides could have been constructed in a manner that would have allowed them to be universally accessible. This document will contribute to correcting this situation.

I would especially like to thank Chris Patton for his valuable input and contributions to the compilation of this document, and to my wife Natasja who assisted me with taking measurements of hides and providing input on both the hide audit document and this document. I would also like to thank those people who submitted photographs of hides. I am grateful to David Chamberlain for his financial and other contributions to the bird hide project at Moreletakloof Nature Reserve. David Alston, Mark Anderson, Eve Gracie, Joy Clack and Bryony van Wyk assisted with the editing and layout of the document and Faansie Peacock did the excellent sketches.

It is my hope that this document will provide a valuable resource to people and organisations that are planning to construct a bird hide or a walkway. With quality birding facilities that are accessible to all people, including those who are mobility impaired, all South Africans will be able to enjoy our country’s wonderful birds.

Ernst Retief
Regional Conservation Manager: Gauteng and Limpopo
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All photographs by Ernst Retief unless indicated otherwise.
Front cover & back cover images: Peter Ryan
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INTRODUCTION

Birdwatching is one of the world’s most popular hobbies and bird hides and boardwalks are useful facilities that allow birdwatchers to pursue this pastime. These facilities add to the value of the property and provide an enhanced birding experience to visitors.

Although most facilities are well planned and functional and allow birdwatchers to fully enjoy their hobby, some are not. Fortunately hides that do not meet the required specifications can be upgraded or modified at little cost, but in many instances hide builders are not aware of the deficiencies in the first place or do not know how to correct them.

Hides are not always built with accessibility in mind. Although this has changed during recent years, many hides remain inaccessible to people in wheelchairs, people who are old or frail, and even parents who visit a hide with their children. With some ingenuity most hides can be made accessible to all.

The purpose of this document is to provide information about the design of universally accessible bird hides. It should be noted, however, that there are aspects of construction that are not provided in this document but can be discussed with the architect and builder.

THE PURPOSE OF A HIDE

Hides can have a number of purposes, but the basic aim is to provide the birdwatcher or naturalist with the opportunity to get close to birds in their natural habitat. A carefully constructed walkway and hide allows a birdwatcher to access the hide and observe, study and photograph birds without disturbing them.

Bird hides can also be used for educational purposes. Materials such as posters about the birds and other animals found in the area and about relevant conservation issues or initiatives (such as the Important Bird Areas Programme) can be placed inside the hides (see Figure 1), and a hide can also be used as a practical classroom to teach children about the environment (see Figure 2).
**ETHICAL ISSUES**

It is important for bird hides to have little or no impact on the environment, both during construction and subsequent use. For example, water flow should not be altered, and only the minimum number of plants (if any at all) should be removed during and after construction. During the planning process consideration should be given to how the environmental impact can be minimised.

Hides can also have a positive impact on the environment; for example, in an area with little control, people might walk through a wetland and trample sensitive areas. By building a hide and pathway, people will be guided to use only the hide and, in doing so, limit damage to the rest of the area.

Rules about the use of the hide should be set out and clearly communicated to users through signboards and notices inside the hide and even at the entrance to the property. This could include the opening and closing times, that feeding of birds and animals is prohibited, that playback of bird calls is not allowed, and that litter must be discarded in the available dustbins. Arrangements must also be put into place to empty dustbins on a regular basis. Unethical practices by photographers to lure birds to the hide, such as the use of cages with exotic fishes to attract kingfishers, should not be allowed. These rules should be policed as far as possible and appropriate steps taken against offenders.

**TYPES OF HIDES**

There are two broad types of bird hides, namely temporary and permanent. Temporary hides can be very basic and consist of a cover or a screen made of cloth, plastic or other material that can be folded up after it has been used. Photographers and researchers often make use of these hides to get close to nest sites without disturbing the breeding birds. This guideline is not about this type of hide and only hides of a permanent nature built from metal, wood or bricks will be discussed. Should you wish to find out more about temporary hides, there is a lot of information available on the Internet.

There are different types of permanent hides. The most common is built near a wetland, dam or other locality where birds occur. It must be emphasised that, although this guideline is aimed at birding hides, they can also be used to observe other taxa such as, for example, mammals, reptiles and even fish. In fact, it will add considerable value to a hide if it can also cater for observing a variety of other wildlife.

Hides at vulture feeding areas provide the observer with the opportunity to view these scavenging birds from nearby as they feed on an animal carcass placed at the site.

Bird photography as a hobby has grown tremendously during the last few years, and this is mainly because of the growth and improvements in digital cameras. A hide provides a photographer with excellent opportunities to take close-up photographs of birds and other wildlife. The requirements of a hide that caters for photographers are not too different from an ordinary bird hide, but factors such as the position of the hide in relation to the sun and the
size of the viewing slots must be considered. Throughout this document reference will be made to the needs of photographers and how these should be catered for.

**DESIGN PROCESS**

Many people underestimate the amount of planning and cost involved in building a hide. As with all building projects, by spending more time on the planning process, errors will be eliminated or minimised during the construction phase.

Consider drafting a design document that can include a brief description of the project (the purpose of the hide and who the potential visitors will be), the results of a survey of the area (the boundaries of the property, topography and vegetation, existing toilet facilities, etc.), and a draft proposal and design. When this document is approved an architect or draughtsman can draw up the final design.

It is critically important to obtain the buy-in and support from the landowner or manager of the property, as they will be fully or partially responsible for the management and maintenance of the hide.

**FINANCIAL CONSIDERATIONS**

Building costs continue to rise at an alarming rate and care should be taken not to underestimate the cost of building a hide. The two major costs are that of the construction materials (this will be discussed in more detail later in the document), and the actual construction costs. Hides built by volunteers, such as the friends of a nature reserve group, will considerably reduce the overall cost, whereas hides built by construction companies can potentially double the cost as the labour component can be very high.

Determining whether volunteers can do the construction of the hide is dependent on the expertise available in the group and the complexity of the hide design. However, as will be explained in this document, building a hide requires considerable expertise, so due care should be taken when choosing this option.

If funding is available, the preferred option is to use a construction company to construct the hide. If this option is used, contractors need to be aware of the design requirements of hides as set out in this document.

As indicated in the following point, financial provision should also be made for maintenance of the hide and, although not common practice, consideration should be given to insuring the hide against damage from fire or other factors.
MAINTENANCE

Management of a hide does not stop when construction is completed, and continued maintenance will be required for many years. Hides are usually located in harsh environmental conditions and, if not maintained, will quickly fall into disrepair. When planning hide construction, due consideration must be given to the cost and labour required to maintain the hide.

Some of the maintenance issues to consider are the cleaning of pathways, repairing of planks and benches, varnishing and repainting of walls and doors, maintenance of the roof, and replacement of posters and other educational materials.

Maintenance around and under the hide should also be done on a continual basis. Plant material under, around and in front of the hide may need to be cut back regularly, mud flats opened up, and exotic plants, such as water hyacinth, removed.

LEGAL CONSIDERATIONS

When building a hide in a nature reserve, national park or other formally protected area, the legislation relevant to the protected area should be carefully studied. Even in areas not formally protected, and especially where wetlands are likely to be impacted, there is legislation to consider. For example, the National Environmental Management Act (No. 14 of 2009) and relevant proclamations (for example, R544, R545 and R546) clearly stipulate when full Environmental Impact Assessments or Basic Assessments must be completed. Proclamation R544 (18 June 2010), for example, states that when a hide and its supporting infrastructure is larger than 50 square metres and within 32 metres of a watercourse, construction cannot commence without receiving an authorisation from the relevant authority, which in this case is the province. In this instance a Basic Assessment needs to be completed. Proclamation R546 (18 June 2010), relevant for protected areas, states that an environmental authorisation is needed where the size of the hide and supporting infrastructure is more than 10 square metres. Hide builders should therefore make sure about the legal requirements for their area.

It should also be determined whether indemnity forms need to be completed and signed by people who use the hide. In general this should not be needed, but consider providing information boards that exonerate the landowners and managers of the property from claims occurring when people visit the property and use the hide.
There are several hide types with a variety of designs, and a selection of photographs are included on this page.

In the rest of the document, the finer details of hide design are considered. It will not, however, always be possible or necessary to implement all of the principles and ideas mentioned here.

Builders should use their initiative and build a hide which best serves the needs of users based on available funding, topography, habitat and other factors. Even the simplest hides can work perfectly and it is not always necessary to build modern-looking hides that use the newest materials on the market. Common sense should be applied when evaluating the different proposals mentioned in this document.

Figure 4 (above): Conventional construction materials to build hides are not always readily available. The hide above, in a rural area of Mozambique, was mostly constructed of local materials. Photo: Tania Anderson.

Figure 5 (above): This hide at Delta Park is unusual in that it is open at the back. It makes access to the hide very easy and reduces building costs. It will not, however, provide much protection against the elements.

Figure 6 (left): This mobile hide at Marievale Bird Sanctuary has the advantage that it can be loaded onto a trailer and moved to a new area. This is especially valuable in areas where the water level rises or recedes.

Figure 7a (above) and b (right): This is a standard hide and is usually constructed near or over a wetland. It has an entrance in the form of a walkway, and there are benches and viewing slots (Cumberland Bird Sanctuary).
PLACEMENT OF A HIDE

1. The hide must add value

The first factor to consider when evaluating the placement of a hide is whether it will make it easier to observe birds. It is not necessary, for example, to build a hide in an area where birds can be adequately viewed from already installed benches or even vehicles. In such instances the birds might be used to the movement of people and a hide will add very little additional value, especially if the wetland is very small. If it is decided that the hide will add value to the birdwatching experience and/or the property, then the factors below need to be considered.

2. Target a variety of habitats

Hides will usually be built near a river, dam, waterhole or other wetland where birds and other animals regularly congregate, eat or breed, and where they can be seen throughout the year.

The most successful bird hides are built in places where there is a variety of habitats and where a diversity of bird species can be seen. A hide overlooking a large dam with only open water, for example, will most probably limit the number of species that can be viewed. A hide close to water, but with other habitats such as reedbeds, bushes, trees and mud flats, will maximise the number of bird species that can be seen. Weavers and bishops may breed in the reeds and allow the observers to watch nest building and other breeding activities. Trees and bushes will attract other species, such as warblers. A hide built overlooking a mud flat will provide excellent opportunities to watch waders.

Hides are occasionally built away from water, such as at a site where food is provisioned. Vulture restaurants are a good example of this type of placement.

Figure 8: A person should ideally be able to see many habitats from a single bird hide. A wide variety of habitats will attract more bird species. Illustration: Faansie Peacock.
3. Keep the hide as natural as possible

The hide should be positioned to enable a clear view of the target area, such as a wetland. In many instances the hide will be built near the water’s edge or even in the water. Birds will quickly get accustomed to the new structure and may even breed in or on it!

The entrance to the hide should face away from the wetland and ideally, when entering the hide, the viewer should not be seen by the birds in the target area. It may not always be possible to achieve this in instances where hides are placed in open areas like grasslands.

Birds will more readily accept a hide that blends in with the environment. This is achieved, for example, by reducing the effect of the outline of the hide against its background. Plants or a hill behind the hide will help reduce the outline of the hide and using materials with natural colours will also help. Many products, for example roof tiles, with natural brown and green shades, are available in the market place and could also be considered.

4. Direction of the viewing slots

A hide in the southern hemisphere should face south, i.e. away from the sun. A hide facing north will make it difficult to see birds as the observer will be looking into the sun. It is also not best practice from a photography point of view to have the sun directly behind the photographer (hides that face south-west will provide the best light conditions for photographers in the morning). Hides facing east and west will have limited value, as this will only suit photography in the early-morning and late-afternoon. Hides that allow viewing and photography in several directions (to the south, east and west) are ideal.

These rules, however, are not cast in stone. Sometimes the topography of the area dictates that a hide must face north and such hides can be very useful, but their limitations need to be understood.

The height of the hide above the viewing area is also an important factor to consider. For photography purposes it is preferable that the photographer is at the same level as the bird to be photographed, so hides at ground level are preferred. In some instances plant cover may not allow this and the hide will then have to be raised to allow a view over the plant material (see Figure 10). Hides at a higher level will also provide a larger viewing area. Hides in forests are usually built at heights of nearly 5–10 metres, which will allow one to view birds in the forest canopy.
CONSTRUCTION MATERIALS

Hide designers have a wide variety of materials from which to choose. Most hides are built from wood, bricks, natural stone or steel, or a combination of these materials. Selecting the correct materials will be based on a number of factors and this is discussed below. It is suggested that local suppliers are visited to determine what materials are available and the costs thereof.

1. Wood

TYPES OF WOOD
Wood is generally a cheaper building material than bricks and steel. It also looks more natural and blends into the surrounding environment. It is also relatively easy to build with wood. On the negative side, wooden hides need more maintenance than hides built with other materials.

The types of wood that can be used for the construction of a hide include pine and meranti, and gum poles can be used as corner posts and as supports for the hide (see Figure 12). Plywood can be used for certain parts of the hide (for example, flaps over the viewing slots or for the poster boards), but should preferably not be used for the construction of the hide walls. The plywood should ideally be of exterior quality, which means it has been made using waterproof glues.

TREATMENT OF WOOD AND FIRE RISK
Untreated softwoods will quickly begin to degrade when left outdoors. Wood can be attacked by fungi, wood borers and termites, and by molluscs and crustaceans in coastal areas. The best way to protect the wood against these threats is to treat it with preservatives (a combination of fungicide and insecticide).

There are two types of wood preservation, namely primary and secondary. Primary preservation involves a process where the wood is treated by chemical preservatives through high-pressure processes. The standard chemicals used in South Africa are copper, chrome and arsenic (CCA). Wood treated with these compounds cover a wide biological spectrum. The copper is a fungicide and the arsenic is an insecticide plus a back-up fungicide. The chrome acts as a fixing agent. CCA-treated timber is odourless and can be painted or stained once dry. This treatment is done before construction begins and is therefore preventative.

The standard of the wood to be used for the hide should be clearly stipulated on the plans. In addition

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<td>H4 – Exterior in ground</td>
<td>Fungal decay and insect attacks</td>
<td>High risk</td>
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<td>Fungal decay and insect attacks</td>
<td>High risk</td>
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<tr>
<td>H6 – Marine</td>
<td>Fungal decay and marine borers</td>
<td>High risk</td>
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Table 1: Protection of wood classes

Figure 12: Gum poles are usually used for the corner posts of the hide.
to the requirement that the wood must be CCA treated, the plan should also indicate
the category of the Hazard Class System to which the hide should comply (for most
hides, the category will be H5 or H6, see Table 1 on the previous page).

Secondary treatment is mostly done after installation and is supplemental or correct­
tive in nature. An example is where the wood is painted with creosote. Creosote will
protect the wood from outside factors. Poles planted in the ground are usually covered
with creosote as extra protection. During the lifetime of the hide, the wood can also be
painted with creosote on a regular basis. Creosote can only be used in areas where the
wood will not come into direct contact with people. Other products in this category to
consider are Waxsol, Woodoc and Silkwood. The local suppliers should be contacted for
advice as to the best product to use in different areas.

When buying pre-treated wood, check that it is safe for use where human contact
will be high. Certain
preservatives, such
as those mentioned
above, can present a
health risk, but if prop­
erly treated should be safe for humans and animals.

Fires can destroy hides built from wood, especially
if reeds and other dense vegetation surround the
hide. Careful consideration should be given to this
risk factor when choosing the materials to be used
in the construction of a hide. (For more information
about this subject, see also Fire on page 18. For more
information about hides built in water see page 18.)

2. Bricks

Hides constructed of bricks will cost considerably more than hides built of wood. Building with bricks also requires
concrete and other materials and this adds to the cost. It is also more labour intensive to build with bricks. They are,
however, more durable, relatively fireproof and maintenance may be less than for other materials. Although bricks
may not necessarily be as natural looking as wood, they now come in more natural colours and this option should
be considered.
3. Metal

Very few hides are built entirely of metal. This material is usually used in combination with either wood, brick, cement or corrugated iron (see Figure 15). The roofs of hides can be constructed with corrugated iron and doors can be made of metal plates. The frame of the hide or the support structures and brackets that provide stability to the hide can also be made of metal.

All metal parts (including bolts and screws) should be either galvanised or consist of stainless steel (very expensive), as these parts will have to endure severe environmental conditions and will rust quite quickly, especially in wet conditions, if not sufficiently protected. Preferably do not use corrosion-resistant coatings as they are not durable enough over the long term.

4. Concrete/paving bricks

Building the floor of the hide as well as the walkway to the hide with concrete (a combination of cement, sand and stone) or paving bricks is ideal and it improves accessibility because a very even surface can be achieved. It is, however, not always possible to use concrete in hides that are elevated or, for example, when the hide is built in wetlands or if the ground is unstable. Very little maintenance is needed for concrete and cracks can be repaired where and when necessary.

If paving bricks are used for a pathway, grasses and other plants need to be cleared between the bricks on a regular basis. If left unattended, these plants may become an obstacle, thereby reducing access to the hide.

5. Thatch roofs made of grass

Thatch grass can be used to cover the roof of the hide. It provides a natural look and can be less expensive than other materials. It is also a good insulator and will keep the hide relatively cool and dry. The high cost of maintenance, however, is the downside to using thatch and over time it may end up being more expensive than other materials. The grass needs to be maintained and re-ridging will be required every few years. The life span of a thatch roof is between eight and 15 years. Thatch grass is not as fire prone as generally perceived and if correctly constructed and treated should not easily catch fire. It also burns slowly, but even so thatch grass is a bigger fire risk than other building material such as tiles.

6. Recycled plastic materials (Polywood or composite materials)

Polywood or composite materials are new products that can be used for the construction of walkways and benches (see Figure 16). The material is made from domestic, commercial and certain industrial plastic waste. It has the visual appearance of wood and is very durable, especially in wet conditions. It also requires very little maintenance and can outlast timber, and is more environmentally friendly than other materials. On the negative side, this material is more expensive than wood.
SIZE OF THE HIDE

There are basically three factors that will determine the size of the hide. These are:

1. **The available area where the hide will be built and the size of the target area.** The size of the hide should be in proportion to the area to be viewed. If, for example, the wetland in front of the hide is small, then it will not be aesthetically pleasing to build a large hide that will dwarf the wetland.

2. **The number of people who will be using the hide at any one time.** The designer will have to take into consideration the number of people who will use the hide. In game reserves the number of visitors can be considerable and, in such cases, hides should be built to cater for large groups or control measures should be put in place to limit the number of people who will simultaneously use the hide. Long queues outside a hide detract from the experience of the visitor and can also impact negatively on the animals in the region.

3. **The budget available for the project.** A large hide will require more materials and labour, thus adding to the cost of the hide. The available budget will therefore also determine the size of the hide.

Hides can also be designed in such a way that extensions can be added over time as finances become available or if the need for a bigger hide arises. In this case, the design should allow for future expansion.

SIGNAGE

Appropriate signage, not only at the hide but also at the entrance to the property and on the roads or walkway leading to the hide, plays an important role in informing users about the road network, what to expect in terms of the terrain to be covered (hilly, rough, smooth, accessible for wheelchairs, etc.) and the rules to be followed (see Figure 17).

Signs can also be used to provide information about the area, including the mammals and birds one can observe, the type of habitats and relevant conservation projects.

The use of Braille can also be considered in addition to normal printing. However, as Braille is only understood by about 30 per cent of visually impaired people in South Africa, consideration should also be given to having recorded information that can be listened to.

It is important to note that it is not politically correct to name a hide, boardwalk or walkway as a Braille Trail or a trail for the disabled or blind. Calling it a Sensory Trail or a Discovery Trail are better options to consider.
Signage also allows the opportunity to acknowledge the contribution of the sponsors of a hide, but such boards should merge well with the natural environment. Large, colourful boards are inappropriate and will have a negative impact on the experience of visitors (see Figure 18).

As indicated elsewhere (The purpose of a hide on page 5 and Partitions on page 26), educational and other material can be placed on the redundant space inside a hide, such as the back and side walls (see Figure 19). Materials that can be considered include posters with images of the birds and other taxa that can be seen from the hide, information about the fauna and geology of the area, maps showing the location of the hide in relation to the rest of the property, and details about the conservation projects being undertaken in the area. (Tip: generic posters, for example a poster of all the birds of South Africa, should not be used. Rather display posters that only show the birds that occur at the site.) If colour ringing projects are being carried out, observers could be asked to look out for birds with colour rings. The procedures to report these sightings should also be pointed out. At a vulture hide, a book can be placed at the back of the hide where information about ringed and tagged vultures can be entered.

A useful feature of hides on the coast or lagoons, where the tide levels might determine the number and type of birds that can be observed, is to place a tide timetable in the hide to indicate the timing of high and low tide.

Consideration could also be given to adding a white- or blackboard, or providing a book, where observers can record information about their sightings. Information such as the name and sex of the species, immature or adult, and date and time observed can be recorded, as well as interesting behaviour, such as breeding behaviour. Over time these data will become a valuable source of information about the species that occur at the site.
A – Loose map sheets for visitors

B – Fastened permit book/visitors’ register that visitors must complete upon entry

C – Welcome to bird sanctuary – main attractions and specials, visiting hours with clock images for summer and winter, contact details, rules and regulations in symbolic form, etc.

D – Map of bird sanctuary, including ‘you are here’

E – Bird sanctuary ‘advertisement’ and access information, alongside main entry road. Plus ‘aims’ of what makes the site important, e.g. important breeding colony of rare species

F and G – Numbered points with ‘what to look for at this point’. These can also have a navigational purpose, e.g. lookout tower left, main dam right

H – Best times to visit, with e.g. tidal information or information regarding sun direction. Also notices about colour-ringed birds, etc.

I – Special sightings log on white- or blackboard

J – Some species likely to be seen at the hide, with basic identification and biological information

K and M – Hide name (and sponsor name, if relevant), and perhaps a sign that says ‘quiet please’

L – Lookout tower, plus warnings to ‘use at own risk’, ‘be careful’, etc.

Figure 20: With a bit of creativity, signs and educational material can be placed at a site to ensure that visitors get the most out of their experience. Illustration: Faansie Peacock.
UNWELCOME GUESTS

Bird hides not only provide shelter to birdwatchers, but also potentially provide shelter for other animals! Hides that are permanently open can be used by birds for breeding (for example, swallows may build their nests under the roof), by bees to build their hives, and even snakes may use a hide on occasion.

Not all of us might consider these animals as unwelcome guests and it can be a pleasant experience watching swallows breeding at such close proximity. The safety of the users of the hide (from bees, snakes and other animals), however, should be foremost. It may therefore be necessary to close off the hide as best as possible. Allowing birds to breed in the hide can also lead to unhygienic conditions, making the hide unusable in extreme cases.

FIRE

Bird hides built of wood can very easily burn down. Hides should be built from fireproof materials and the area around the hide should be kept clear of grasses, reeds and other flammable plants and materials. In areas where this cannot be ensured, the use of materials other than wood should be considered. Although these materials may be more expensive initially, they may require less maintenance and protection against fire and thus prove to be more cost effective in the long run.

BUILDING A HIDE OVER WATER

Hides should preferably not be built over water. It adds considerably to construction costs and special measures must be put into place to ensure that the wood will not rot (see Figure 22). If a hide has to be built in this way, special care should be taken to ensure that the support poles in the water are sufficiently protected.

Another factor to consider is that water levels are not constant, and this must be taken into account when building a hide over or near water. A hide should be built high enough above the water to make provision for floods or unusually high water levels. The same is true for the walkway leading to the hide as higher water levels can make them soggy and dangerous or difficult to walk on.
ACCESSIBILITY

As mentioned in the Introduction, one of the main aims of this document is to provide information about how hides can be made more accessible to people who are mobility impaired. The term universally accessible refers to facilities that are accessible to all people regardless of their physical, sensory or cognitive ability (see Figure 24). Although this term is often associated specifically with access for people with disabilities, it also includes the elderly and young children. It is important to BirdLife South Africa that all birdwatching facilities should be made universally accessible so that everyone interested in birds and their conservation can enjoy and study them.

Making hides universally accessible is therefore of value to all, and not only people with physical limitations. It should be noted that bird hides can also be successfully used by people who are blind, as they can enjoy the calls of birds and the general sounds of nature. Adding facilities with Braille will enhance their experience.

It is important to note that building a universally accessible hide does not require lots of additional funding. As is shown in this document, with a bit of initiative and careful planning the cost can be kept to a minimum provided accessibility is taken into account during the design process so that costly future adaptations are minimised or unnecessary.

It must also be noted that an increasing number of people who are mobility impaired are becoming birdwatchers or naturalists. With technological advancements, for example specially adapted cars and newly designed off-road wheelchairs, more and more people can now enjoy birdwatching as a hobby. With more universally accessible birding facilities, even more people will be motivated to take up this pastime.

Figure 23: The ladder of this hide is much too steep and dangerous – even for physically strong people.

Figure 24: Chris Patton is an extremely active birdwatcher and also contributes data to the Southern Africa Bird Atlas Project (Rietvlei Nature Reserve, Pretoria).
ELEMENTS OF A HIDE

There are a number of basic principles to consider when designing a bird hide. Each aspect of making use of a bird hide will be considered below, from the moment the birdwatcher stops in the parking area until he or she is inside the hide.

1. Parking area

For most bird hides, a parking area for vehicles is included in the design. The surface of the parking area should preferably be made of tar, cement or paving bricks (see Figures 25 and 26). This could, however, add considerable cost to the project so flat ground or a grassy parking area may have to suffice. Regular maintenance of the latter will be necessary to keep it in good condition. The gradient of the parking area should not exceed 1:20. This will allow wheelchair users to get in and out of the vehicle and on and off the wheelchair more easily.

2. Walkway

The walkway will take the birdwatcher from the parking area to the hide. It is an important part of the design and if not well planned can make the hide inaccessible (see Figures 27–33). Refer Boardwalks on page 28 for the factors that should be considered when building a boardwalk.

Some walkways can be quite long and if near the viewing area can potentially scare off birds. In such instances consideration should be given to adding a screen – made of reeds, wooden poles or plants, shade netting or other materials – to keep the observers hidden from the viewing area.

Figure 25: This paved parking area at Rondebult Bird Sanctuary includes an entrance for wheelchair users.

Figure 26: This is a perfect example of a well-managed parking area (Rondebult Bird Sanctuary).

Figure 27 (left): Although the pathway to the hide is perfect, it would have been better if the steps were replaced with a low-gradient cement walkway (Rondebult Bird Sanctuary).

Figure 28 (right): This is a good example of how the entrance to a hide can be made more accessible by lengthening the entrance and therefore lowering the gradient (Roodeplaat Dam Nature Reserve).
Figure 29 (above): The entrance to this hide has been covered by shade netting (Geelbek Hide). Photo: Peter Ryan.

Figure 30: A good example of a well-designed and constructed pathway, paved and with the correct width of between 1 000 and 1 200 millimetres (Rondebult Bird Sanctuary).

Figure 31 (above): The pathway to this hide is perfectly constructed with paving, but the bridge is poorly designed and will make it difficult for a wheelchair to cross. In this instance it would have been better to lay the planks crossways (from left to right on the photo) instead of lengthways (Rondebult Bird Sanctuary).

Figure 32 (below): The spaces between the planks in this walkway are too large; they should be less than 10 millimetres (Rietvlei Nature Reserve).

Figure 33 (right): Rubber mats placed on the walkway will make it less slippery when wet and will dampen noise (Austin Roberts Bird Sanctuary).

2. Walkway (cont.)
3. Roof

The roof of a hide is its most prominent and visible feature and therefore the materials and colour need to be taken into account during the design phase. In the past, thatch grass and corrugated iron roofs were the most popular materials to be used. Grass is still a good option (see Thatch roofs made of grass on page 14), but consideration should be given to the use of Chromadek in place of corrugated iron.

Chromadek is light, durable and is produced in natural-looking colours. Chromadek is made up of cold-rolled steel sheets, protected against corrosion by a layer of zinc and then covered with two coats of specially-formulated paint. Chromadek has exceptional colourfast properties and its resistance to corrosion and weathering ensures that no repainting is needed for up to 20 years.

Harvey and Dura Tiles can also be considered (see Figure 34). They are less expensive than Chromadek and can be very natural looking. No extra support is needed for these tiles and standard wood rafters will be sufficient.

The gradient of the roof is not a crucial factor, but should be steep enough to allow water to run off the hide. A lower roof would also be less prominent in the environment.

Most hides do not have a ceiling, but for aesthetic purposes consideration can be given to including one. It may also help keep birds away from breeding in the hide. Different types of ceilings can be considered, including the use of reeds.

4. Floor

The floor of the bird hide should ideally be made of cement. This is not always possible due to cost, and concrete floors are not practical for elevated hides. When wood is used, the spacing between the planks should be less than 10 millimetres. If wider than this, the front wheels of wheelchairs might get stuck between the planks. Consideration can also be given to putting rubber mats on the floor to make it less noisy and less slippery.

5. Seating

Benches are the most practical solution and can be made of wood, metal or Polywood, or a combination of these materials. Benches may be either permanently fixed to the floor of the hide, or be freestanding or hinged to assist wheelchair users. Benches that are moveable allow users to place them where they feel comfortable, but the disadvantages are that they may make a noise when moved or could be removed from the hide. The best option is a hinged bench design, which makes provision for both wheelchair and non-wheelchair users (see Figure 35). This is a relatively inexpensive method that caters for the needs of all. Consideration can also be given to having benches at different heights to make provision for people of different heights (see also Specifications on page 24).
6. Doors and gates

Some bird hides have no door, instead including a wide entrance to allow easy access. There are, however, many negative factors to this option, including access control and security. A door will also limit light from entering the hide. Security gates can be installed to further improve security.

There are a wide variety of doors on the market for the hide designers to consider (see Figures 36–39). Importantly, the materials or design should not result in noise when the door is opened or closed (such as a door scraping on the floor or hinges creaking).

The door entrance should preferably be at least 900 millimetres wide, but note that a security door inside the door frame would reduce width, making it inaccessible to a wheelchair user. If this is a problem, alternative installations for the security gate should be considered.

Another option is to install a gate at the entrance path to the hide. This might be the preferred option in hides where a large group of people will visit, such as a national park. When considering a gate, accessibility must also be considered. Kissing gates (see http://en.wikipedia.org/wiki/Kissing_gate) and gates with springs that make opening the gate very difficult should not be used.

There are few things worse than a birdwatcher planning a day’s outing to a locality only to come to a locked hide gate with no information as to where the key can be obtained. If the doors/gates are locked, the opening/closing thereof should be managed and/or instructions about where the key is left should be clearly displayed.

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Figure 36: A natural-looking wooden door (Wakkerstroom Tourism and Education Centre). Photo: André Steenkamp.

Figure 37: Poorly designed security doors can seriously limit accessibility. In this example the security door cannot open fully due to the overhang of the roof of the hide.

Figure 38: A steel door can be locked to provide additional security, but control of the keys is important to ensure ready access to the hide when necessary.

Figure 39 (right): This type of gate can easily be opened by everybody and is a good option to consider (Delta Park).
7. Windows, viewing slots and shelves

Although there are many factors to consider in the design of a hide, the design of the viewing slot is one of the most critical factors. A badly designed or placed viewing slot can be extremely uncomfortable physically for the observer, negating all the other well designed aspects of the hide, so it is important to ensure that the viewing slots are well designed.

SPECIFICATIONS

The accepted height for a viewing slot is about 1 000 millimetres from the floor of the hide to the base of the viewing slot. However, people differ in height and an option is to place viewing slots at different levels (see Figure 40). Higher viewing slots can be considered for people who would like to use a telescope while standing up.

A shelf on which to rest one’s elbows or to place reference books should be installed and should be placed 800–900 millimetres above the floor of the hide. It should be about 300 mm wide and sturdy enough to support elbows, field guides, cameras and notebooks. The shelf should preferably have a ridge and be slightly angled away from the floor to stop books and expensive cameras from sliding off.

The viewing slot itself should be between 250 and 350 millimetres wide. For photography purposes this is crucial. The diameter of a 600-millimetre camera lens is about 190 millimetres, but to allow the photographer to see over the lens the viewing slot must be wider than 190 millimetres (and therefore 250–350 mm is recommended).

LEG CLEARANCE SPACE

A leg/knee clearance space below the shelf and viewing slot should be extended between 500 and 600 millimetres to the front. The space will allow a wheelchair as well as the front wheels and the legs of the user to fit under the shelf (see Figures 41–42).
CLOSING THE VIEWING SLOTS

If left open the viewing slots can be used by birds and other animals to enter the hide. Permanent openings allow access to the elements, especially rain and wind, and can lead to the deterioration of the hide and additional maintenance. Consideration should therefore be given to placing flaps made of plywood or other materials over the viewing slots, which can be opened and closed by users (see Figures 43–45). Observers should be requested by way of notices above the flaps to close the flaps before they leave the hide. These flaps must be designed to operate easily and quietly.

Another option to consider is the installation of glass panes and in so doing allowing no openings to the outside. This is atypical for most South African hides, probably because it limits photography possibilities and does not easily allow the calls of birds to be heard. If glass panes are installed they should be cleaned on a regular basis. The glass should also be installed at an angle inwards from top to bottom to make sure that light is not reflected into the viewing area and to stop birds from flying into the windows.

One-way windows can also be considered as an option and are especially useful in hides overlooking vulture feeding sites. However, this glass is expensive and a cheaper alternative is to ask a glass installation company to fit one-way film between two windows and glue them together. Photography in such hides is not possible through the windows, so special smaller viewing slots that can be opened will then need to be provided. This viewing slot can be made of wood, as in the photo below (see Figure 46), or the opening can be covered by a waterproof covering that can then be attached to the hide with Velcro. It is opened by unzipping zippers on the side of the flap (see Figure 47, although Velcro is not used in the example). Care should be taken so that the loose flap will not interfere with the view of the photographer above the camera (and this can be achieved by securing the loose flap at the top in some way, either using Velcro or straps).

Figure 43: In this hide a mesh has been placed over the viewing slot to allow a wider viewing space and to keep the hide closed. The window can be opened by turning the latch at the bottom of the window (Barberspan Bird Sanctuary).

Figure 44 (right): The same hide from the outside.

Figure 45 (above): Flaps like these are easy to construct and can be closed by using a small latch at the bottom of the flap (Marievale Bird Sanctuary).

Figure 46 (left): The one-way windows in this vulture hide are made with the method described in the text and the smaller slots for cameras can also be seen (Blouberg Nature Reserve). Photo: Johan van Wyk.

Figure 47: The viewing slots at the bird hide at Golden Gate use material that can be unzipped to allow access for a camera lens. Photo: Debbie van Zyl.
8. Partitions

People moving inside the hide or the silhouettes of observers can alert and/or scare off birds. When the inside of the hide is dark the visibility of outside movement and silhouettes is greatly reduced, but when a door or viewing slots are installed opposite the windows this might create a problem because light entering the hide through these openings will make the observer more visible. In such cases a screen partition should be installed (see Figure 48). Even if the door is on the side of the hide, it is preferable to add some sort of partition to ensure that no light floods into the hide when the door is opened.

Partitions can be in the form of an information board or a permanent wall or – probably best, but more costly – a short corridor can be built from the door leading into the hide (see Figure 49).

9. Toilet facilities

Providing toilet facilities at hides adds additional value to the facility. It is not the purpose of this document to discuss the various toilet facilities that can be built, but it is important to note that these facilities should be made as universally accessible as possible (see Figure 50) and the minimum requirements should therefore be the following:

- Ramped access of appropriate gradient.
- Sufficient door width to ensure wheelchair users can enter and exit the toilet cubicle easily.
- Sufficient room within the facility to enable a wheelchair user to move as required.

Building a toilet facility can be expensive and should be carefully budgeted for, especially if water is piped from afar to the facility. All the guidelines mentioned above for bird hides (i.e. the access road and the door) are also relevant here.

There are many layouts for toilets for people who are mobility impaired and local suppliers should be contacted to determine what products are available. In the past toilets were built with grab rails attached to the wall, as illustrated in Figure 51a and b.
New designs, however, are now available in South Africa where the hinged rail can be folded up out of the way when not in use. Because a hinged rail is not reliant on an adjacent wall it can be positioned even closer to the toilet seat and hence increases leverage, as indicated in Figure 52a and b (left).

Some points to consider:

- A wash basin should be positioned adjacent to the toilet. If this is not possible then a supplementary basin or an outlet tap should be positioned within reach of the water closet.
- An 800-millimetre-wide transfer space should be made available alongside the toilet. A wheelchair user needs to be able to manoeuvre the wheelchair beside the toilet in order to transfer from the wheelchair to the toilet and back again without any obstacles.
- The front edge of the toilet should project at least 750 millimetres from the rear wall. This allows for enough space for a wheelchair user to gain access to the toilet pan.
- The toilet seat height should be between 450 and 500 millimetres. The seat raiser can be removable. This is to enable the physically disabled person to comfortably transfer onto the seat and off again. The ill and the elderly may also be too weak to transfer to a seat that is too low or too high.
- An extended flush handle can be placed on the side of the transfer space. This enables the disabled person to comfortably reach the flush handle and use it effectively from the position of the wheelchair or the toilet seat, where it may be difficult to reach the conventional type of flush handle.
- A cranked grab bar should be located 820 millimetres above the floor. This must be measured to the centre line of the toilet to enable the physically disabled person to use the bar to lift him- or herself off the toilet seat onto the wheelchair or into a standing position.
- The toilet paper holder should be within 1 000 millimetres of the seat to ensure that the physically disabled person may comfortably reach it.

Below are some examples of suitable toilet layouts.

![Figure 52a and b](Image)

![Figure 53](Image): Toilet illustrating correct grab bar and lever flusher positions.

![Figure 54 (left)](Image): Toilet illustrating appropriate access to a wash basin within reach of the toilet.

![Figure 55 (right)](Image): Toilet illustrating an improvised water supply in the absence of access to a wash basin.
ATTRACTING BIRDS TO THE HIDE

There should be no need to attract birds to a well-placed hide overlooking an area already teeming with birds. However, it might sometimes be of value to add features that will attract birds closer to the hide. For example, nest boxes can be placed near the hide and, if used by the target species, observers can then view the birds from nearby. Nesting platforms may also be used by ibises, herons and other birds.

To allow better photography opportunities, sticks can be placed in front of the hide that may be used by birds, such as swallows, as perches. These structures should preferably be as natural-looking as possible so that they do not detract from the look and feel of the hide. Photographers will also have the opportunity to photograph the birds sitting on these natural-looking perches.

BOARDWALKS

Boardwalks provide a means to bird watchers to walk across a wetland to observe birds and to view an area of a wetland that would otherwise be inaccessible (see Figure 56). In some instances boardwalks can also serve as the entrance to a hide.

Boardwalks should be universally accessible and only a few factors need to be considered, which have been discussed previously. However, the following points must be emphasised:

• The most important factor to consider is that the gradient of any boardwalk should not exceed 1:10. If it is too steep, flatter areas should be created where users can rest for a few minutes before moving on.
• The surface of the boardwalk should be as smooth as possible and if planks are used the spaces between the planks should be less than 10 millimetres. There should be no rocks, tree roots or long grass to create an obstacle for users.

Figure 56: A beautiful example of a boardwalk, which allows users to traverse the wetland and also provides access to the hide (Geelbek Hide). Photo: Peter Ryan.
• If the boardwalk covers a wetland, building materials such as galvanised metal (steel) mesh can be considered (see Figure 57). Using galvanised steel will limit maintenance, in comparison to wood, and is totally accessible. Polywood can also be considered as an option.

Wheelchairs vary in width from 580 to 720 millimetres and in length from 980 to 1 200 millimetres (the length is important as it determines the turning circle). The minimum width for a boardwalk should be about 750 mm, but 1 000–1 200 mm is preferable, particularly if it is a two-way path where wheelchairs might have to pass each other. If this is not possible, certain areas can be created that are wider and will allow wheelchair users to pass at that point or can be used as turning circles. These areas can also be used to place benches for resting points.

When building a boardwalk, safety is a major concern, especially where water is involved. A boardwalk that is even a few centimetres above the ground requires a raised kick plate of about 20 millimetres. This is a raised ridge that will prevent a wheelchair’s front wheels from rolling off the boardwalk and potentially tipping the chair user into the water. Visually-impaired persons can also use this edge to find their way with a walking cane.

Other safety features that should be considered include rails, guide ropes and protective barriers that will not only provide support to users but also ensure that people do not fall from the boardwalk. These barriers should have a continual flow into the support poles and be free of any sharp objects.
FLOOR PLANS

Below are three examples of some basic floor plans for hides, and these plans can be further developed and expanded as required.

1. Floor plan 1

This floor plan makes provision to enter the hide from the side. The partition in the middle of the floor prevents light from entering the hide and minimises disturbance to observers. Each window section can be about 2 metres wide and the number of sections will depend on the size of the hide.

‘Unused’ space, such as the dividing panel and back of the hide, can be used to place educational materials. Another consideration is whether or not to include tables in the viewing area.

2. Floor plan 2

This plan differs from floor plan 1 in that it has a rear entrance and viewing slots on three sides of the hide. This type of hide is excellent in an environment where there are habitats for birds at the front and sides of the hide.

3. Floor plan 3

This plan makes provision for viewing slots and entrances on both sides of the hide. This design will work well on a site with trails, where the hide will form a connection between two pathways. Naturally there should be suitable habitat for birds on both sides of the hide.
The mission of BirdLife South Africa is to promote the enjoyment, conservation, study and understanding of wild birds and their habitats. For more information visit www.birdlife.org.za

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