

14th June 2015
Darwin Golf Club
Greens Chairman: Mr David Raison

Re: Darwin Golf Course – Preliminary Course Notes

Dear David,

The Course Improvement Plan (CIP) process is well and truly rolling now with a few days on site and a few weeks in the office working on some preliminary concept sketches.

To complete the first phase of works for the CIP I provide sketches for all eighteen holes and this brief commentary. The full Design Report will be more thorough as the process progresses however at this stage I wanted to put down my initial thoughts and talk through some of the first ideas for the golf course.

Please distribute these items accordingly to the personnel at the club and give me some feedback. The CIP is a fairly complex document and there is always some adjustment to be made to the initial design ideas. Nothing is set in stone but I trust you can get a better idea of the reasons why these design suggestions have been made and see why it will create a much better golf course for you.

Introduction

The CIP process is an exercise in assessing the current golf course and looking for ideas to make it better. It's really as simple as that. The tricky part of the process is determining what is "better".

I find that many of the better golfers at a golf club look for more of a challenge, as it probably gives them an advantage over the less skilled players in a competition however I know many of the less skilled players really seem to prefer not being troubled by obstacles and hazards.

We need to look at the adjustment of obstacles on the golf course so that we can achieve a balance that makes it a challenging test of golf whilst still allowing all players to walk around and enjoy their outing. There are some fairly basic rules, or theories on golf course design that can be implemented to achieve this and these will be outlines in the notes below.

I can assure you I am not deliberately looking to make this golf course more difficult nor easier. I think you will find from the adjusted playing strategies on each hole that the golf course will be as difficult as the players chooses to make it. There will always be a safe way to play each golf hole however the golfers will need to take risks to make a better score. This simple philosophy ensures the golf course will be playable for all skill levels.

General Comments

The first pleasing attribute to the golf course, which was a surprise to me, was the volume of water you have available in such a warm climate. The amount of water currently available provides good playing conditions most of the year although I realise it can be placed under stress in the very dry periods. An additional storage tank can only assist this cause.

The course is laid out fairly well however I must admit I was very surprised with the narrowness of some of the playing corridors between the housing. Some of the corridors are as little as 70m wide which is a long way short of today's "standards".

Unfortunately there are no official standards used by modern golf course architects however many of them adopt a minimum distance of 60m from the centerline of the hole to the property boundary. This provides a corridor of a minimum of 120m.

Your problem is further accentuated by the fact there have been plantings made (in the 1980's) predominantly with the African Mahogany species. These trees are now mature and very large in size however many of them are nearing the end of their life cycle and are posing a danger to golfers and nearby residents. This will certainly be a massive problem for the golf club when some of these large trees die. I have already noted the urgency to remove some of these trees around the edges of the golf course, particularly near teeing areas and zones where golfers frequently access.

The removal of these trees will create large spaces against the property boundaries and will effectively reduce the screening to the housing. Other species can be planted however it is likely to be some time before we achieve any decent screening size. This is a very important aspect for the club and one item that requires much more discussion and assistance from relevant experts in the horticultural and botanical fields.

The worst instance of this boundary safety is the 6th hole and one which might require a structural change to the golf course (ie shortening a Par 4 to a Par 3).

The rest of the layout flows okay, albeit through "snug" playing corridors but you will find that I have not really made any recommendations to significantly change the structure of each hole. This part of the design process has generally focused on improving the playing strategies of each golf hole.

Individual Hole Analysis

1st hole – Par 5

The housing is fairly close along the first 150m of this golf hole with the fences only 27-28m off the centerline (bear in mind modern designs look for a minimum of 55-60m). The safety becomes a little safer as the hole progresses and in the latter half of the hole this distance reaches the 60m mark. The removal of any trees along this fence (particularly the African Mahogany) will only increase the safety concerns.

As a result of this boundary issue and the fact there is some solid vegetation on the right I am hoping to remove a few of the internal trees and open up the fairway to the 2nd hole. This will not only provide more sunlight to reach the playing surface but also provide the golfers a little more "bail out" to the right side. This may alleviate the safety issue on the left.

If the fairway is joined up with the next hole there is the ability to create a long "ribbon type" line of mounding through the centre of the fairway and effectively create a driving slot to the left and the right. Those taking the narrower slot up the left will achieve a better line for the second shot.

It's probably worth mentioning at this point that I am not a fan of the current mounding on the golf course. They are isolated, shapes do not flow very well with the lay of the land, and also seem to be placed in haphazard locations with little effect on the playing strategies. I would prefer if these were removed or streamlined into better, free-flowing shapes that can have a direct impact on the playing strategies as with this suggestion on the first fairway.

The mounding around the greens gives the same highly artificial appearance and the ridgelines and shapes stop at the edge of the putting surfaces. Good natural putting greens should connect and tie-in with the surrounding mounding and hollows.

This 1st hole really only provides an opportunity to get home in two for the golfers that can hit the tee shot beyond 260m. Generally I prefer to keep the landing area short of the 210-220m mark clear of obstacles and bunkering as it's the longer hitters that generally have more control over their tee shots and these are the players I prefer to create tempting drive lines. The bunker added on the first hole is down on the right at the 260m mark as this right side of the fairway will definitely be the preferred side to attack the green.

There are further opportunities to thin out the vegetation between the golf holes and this will be a general philosophy throughout the remainder of the golf course where trees are not required for a safety/screening effect.

I have drawn a new putting green which is angled slightly from right to left and features a bunker on the left side at the front. This presents a better line in from the right side therefore this is the only side that needs to be bunkered at the lay-up point. In the best "risk and reward" design principles the golfers need to take a risk and execute the shot well to be rewarded with a better line for the following shot. There is simply no need to bunker both sides of the fairway on this hole or any of the Par 4's or 5's on the layout.

There are some ridgelines and slopes indicated on the sketch that can create a lower front pin position, which will be particularly tricky and a larger rear section.

2nd hole – Par 4

The first item that catches the eye on this hole is the cart path and culvert in front of the tee. I can assure you that artificial features such as concrete paths and safety fences are the most artificial features found on a golf course and most golf course architects are always hesitant to use them. Of course there are always extenuating circumstances in the modern golfing economy and golf carts are deemed a necessary evil. They are not only needed to generate revenue for golf clubs but also to get the players around after wet weather.

The philosophy I use is to implement these artificial features however hide them as best as possible. Large structures such as the path in front of the 2nd tees looks very unattractive and should be moved out of the eyeline as much as possible. Of course they are usually impossible to hide, or camouflage completely but there might have been an opportunity to combine the paths to the 1st green and 2nd tees and create one strip of concrete rather than two (as per the design sketch).

The general rule of thumb with cart paths is to move them to the edges of the fairway as it carries golfers off the tee to the fairway and curve the end of the cart path so the exit point can be varied from day to day. This will assist with the wearing of turf at the ends of the paths.

With the 2nd hole it's a short Par 4 that should be opened up on the right side with the removal of trees as mentioned with the notes on the 1st hole. In a similar scenario to the first hole the green should be re-built to provide a better line from the right side. This will also take some of the safety concerns away from the property boundary on the left side.

This green should have a small trap guarding the front-left side and again a two-tiered green. The larger section will be at the front with a flattish corridor running to the back-left corner and a small "tiger" pin in the back right corner. The gully running diagonally running in front of the green works well with this strategy and this re-shaped green will test the longer hitters more that leave themselves a shot in under 100m.

3rd hole – Par 4

The layout of hole holes with the surrounding residential components certainly does confuse me a little as to why it was designed this way. This 3rd hole has the fences encroaching close just off the tee at only 20m off the centerline and yet it blows out to a very wide distance at the landing area. I only note this as we have an opportunity to add a back "tiger tee" here however only if it is deemed safe with the boundary on the left, just off the tee.

The landing area off this tee works well however would certainly like to re-shape the bunker on the right and the mounds at the rear. This can be done a lot better and hopefully add some of the new bunker liner products in the construction so the bunkers drain better and have less contamination between the clay subgrade and the sand.

I like the double-green effect with the 7th hole however would slightly adjust the surface of the green and the bunkering. I would combine the two bunkers on the left into one and bite it into the green edge a little more. This will also create a wider grass area for the golfers to walk on and off the green which will ensure better turf quality from spread golfer traffic.

4th Hole – Par 4

The 4th is a hole where it appears the longer hitters have a distinct advantage with a wider landing area. My philosophy is to reverse this aspect and give the golfers in the 150-200m the widest area to hit and taper in the width from that point up to 300m for the long hitters. I rarely want to totally block the fairway with hazards as I always intend to tempt the longer hitters into hitting driver, providing they are accurate and play to the correct side of the fairway.

There is already a water body hazard on the right of the fairway and the bunkering on the left is very short at only 170-190m off the tee. I would remove these bunkers and again create a narrow strip of mounding to create a distinct left and right portion of the fairway. It should all be cut at fairway height though over the mound.

Further up the fairway a bunker should be added at the 250m mark where the current trees have been removed. This will put more caution in their tee shots however the drives will need to be close to this bunker on the left side to obtain the best line in.

The green should be swung from left to right so the more difficult shot is from the right side. This will allow the bunkering to be added front-right and allow a very wide access for walking golfers and carts up the left of the green, around the back to the next tee.

The mounding and green needs to be tied together much better as I believe this green is one of the most “manufactured” and artificial looking on the golf course.

5th hole – Par 3

This Par 5 has a variety of options to us to re-build with plenty of variety in the pin locations. The sketch I have provided has a central bunker at the front however still has narrow run on areas to both the left and right pin positions.

It's a fairly wide area down there at the green and plenty of scope to create a wider green rather than something long and narrow.

6th hole - Par 4

This 6th hole maintained a good deal of attention and discussion during my site visit. The hole plays through a narrow 80m corridor between the housing, which is narrow enough, but now amplified by the fact the Large trees will need to be removed for safety.

Much consideration has been given to this hole however with the safety constraints required it may be best, and safest to reduce this hole to a Par 3. I have provided a sketch that shows how the current forward tees can be used, in addition to a new tee and play as a 140-160m hole. I prefer not to use the current rear tee as it will simply bring the housing danger back into play.

There is a large amount of material on the fairway that can be utilized to sculpt a very large and interesting green. It will certainly be a very good Par 3 and have an appearance unlike any others on the course. I have shown the green separated in two parts with a step running along the line of play. This will create a high section on the left and lower on the right. It will all blend well with the mounding at the rear of the hole and on the left.

Whilst we are shortening a Par 4 to a Par 3 I can assure you we are not losing anything in the quality of golf hole. Remember there are no rules that deem a course must be Par 72 and if safety is a concern then this must take precedence.

The advantage of creating the new Par 3 at the start of the current hole means we can utilize the existing green as a spare hole. Spare holes are extremely beneficial to a golf course when it can be used to play on when a complete golf hole needs to be taken out of play for repair or maintenance. This spare hole will play at about 100m.

If some of the vegetation can be retained then this will assist the safety of the boundaries however even if all trees are removed then this hole should prove to be safe.

I have looked at a shortened Par 4 which may still be able to be utilized however golfers will still attempt to hit driver and this will retain the safety concerns. This could be achieved with extensive and costly safety fencing. I am almost convinced that this hole needs to be a Par 3.

7th Hole – Par 5

This is a strong Par 5 at over 500m. It should prove to be a genuine three shotter for most.

There was discussion that there may be the opportunity to add another tank for the effluent water and as a result adding water bodies throughout the golf course should be able to utilize some of this excess water.

As a result I have sketched an enlargement of the water on the right of the tee shot and this larger pond can be angled in to provide more of an obstacle for the longer hitters. There is still ample landing area for the short-mid length players and the water should not pose too much of a problem for their second shots.

The double green works well with the bunker on the right side which promotes the best angle in from the left, whether it is a player trying to attack the green in two or those playing a third shot. The large African Mahoganies should be removed along the fence line and replaced with other species that will break up the view of the fence but not encroach too much into the left side of the fairway.

The longer players will need to squeeze a drive in between the new pond and the fence line to set up an opportunity to get home in two and those laying up should also steer left. A couple of new bunkers on the left side will also enhance this risk-reward approach.

The bunker on the right side of the green can be reduced in size as it is really the portion of sand closest to the green that provides the maximum strategic impact.

8th Hole – Par 3

We have a couple of options with this 8th hole. The reduction of the 6th hole to a Par 3 will reduce the overall Par to 71 if this 8th is retained as a Par 3. We have the opportunity to extend this hole to make a very good short Par 4 and return the overall Par to 72.

There is room to extend a couple of tees back on the same line, towards the back fence or even further back and to the right. The small trees to the right of the current tees would need to be removed however the other trees aligning the adjacent 3rd hole provide a good playing line for this new Par 4.

The existing green would need to be removed and create a flat landing area and the draining cuts though the fairway at the 230m mark. This sets up an interesting carry distance for those trying to get closer to the new green. The new green could be built around the ladies tee on the 9th and sets up a hole of 310m. There could be a carry bunker created just over the drain so many will be tempted to fly this and get closer to the green.

The green would be angled directly at the new tee to try and entice the longer hitters however if they stray off this line the approach shot and recoveries become very tricky with the angle of the green.

I believe this will be a very good, short Par 4 and in tandem with the revised 9th hole will present a variety of scores for players at the end of the front nine.

If the Par 72 is not much of a concern for the club then the 8th can simply be revised as a Par 3, with a better green and retain the original length of the Par 4, 9th.

9th hole – Par 4

During the investigation of the current golf course the one feature I believe was missing was one or two very short, but tempting Par 4's. I strongly believe these short Par 4's in the 240-290m mark provide much excitement for players particularly if there is a chance to reach the green in one hit. Holes that approach 300m really only provide this temptation for the very long hitters but those that are in the 240-260m range attract the interest of many more players providing maximum excitement.

With the amendments to the 8th hole as previously discussed this short, drivable Par 4 now can be created on the 9th. In an effort to provide more exciting golf holes I have added water to my concepts sketches on both the 9th and 18th holes. This will not only add an edge to the playability of the golf holes but also create some better and "cleaner" views out from the clubhouse.

Your club has the unusual situation of the driving range taking prime visual location in front of the members area and the zones left and right of this range does look a little untidy and blocked with large vegetation. I believe the addition of water will vastly improve the aesthetics of the clubhouse surrounds.

This new 9th hole can be as benign or as exciting as the player chooses. There is a very straightforward lay-up distance of 170-190m and a short flick in from there but there is also the highly tempting shot that skirts the edge of the water and possibly onto the green. My goal is to set this hole up so the temptation is high for the players so that if the shot is executed well then they can reach the green and putt for two. Of course in true risk-reward fashion the penalty will be significant if the shot is poor.

There is a nice feature tree that will look good to the right of the green and instead of adding more greenside bunkering the right edge should be protected by a line of subtle mounds that kick the ball a little further right. Those trying to hit the green but finishing pin-high to the right will not have a gimme up and down.

This should be a very good hole that will have golfers writing down a wide range of scores.

10th hole – Par 4

Both the landing area and the green needs to be adjusted here to vastly improve the quality of golf hole.

The green needs to be set up with its bunkering to angle from right to left and entice the golfers to hug the inside of the dog-leg with their tee shot. Of course a fairway trap needs to be added to the inside of the dog-leg.

The left side of the fairway should be smoothed out and left wide open providing a nice bail-out off the tee. If players opt for this side they will already be penalised with a tougher angle of approach so no need to add a bunker on the left of the fairway.

The bunker on the left side of the green can be much smaller with it biting into the edge of the green for maximum strategic effect.

11th hole – Par 3

A minor criticism of the 11th is the fact the long tee points off to the trees on the right. It's usually a preference of mine to align the tee edge with the direction of play, as per my sketch, however again this is purely a cosmetic suggestion.

The key to the Par 3's on a golf course, in my opinion, is to provide variety. The holes should use different clubs and if possible provide varying degrees of difficulty with the pin locations on the greens.

We have variety in the first two Par 3's on the golf course so this 11th should probably have a wider entrance at the front and bunkers guarding the our sides of the green.

I have angled the green a little from left to right and placed the larger bunker into the right side. With a slight step up in the level this right-rear section will be the hardest to hit. Many less encumbered pin positions will exist through the middle section and the flags tucked into the left side will also be tricky.

Once again the mounding and flow of shapes needs to work much better with the surface of the green and the shot angles in.

12th hole – Par 4

There is the ability to add a few metres to the rear tee if required on this Par 4.

This tee shot is probable the most claustrophobic on the layout with the branches really encroaching into the fairway. I would still prefer trees along the right edge to hide some of the tanks and car park area next door but there should be some solid tree trimming, pruning and removal done to allow a safe shot into the right side of the fairway.

A couple of the large Mahoganies can be removed up the left but the ones down there at the landing point provide some screening to the housing and should be retained.

With this green we have the ability to angle it either way but I feel it works best from left to right. This will demand that the golfers come on from the left of the fairway and as a result this left side is where a couple of fairway bunkers should be added. The right side will be clear and wide however the approach shot in is much more awkward.

With the greenside bunkers on the right I would promote all of the cart access up the left side of the green yet still allow walkers to hear either left or right. It is a fairly narrow strip along that right edge near the fence and the grass can wear quickly I suspect.

13th hole – Par 4

The downhill 13th actually provides us with one of the wider corridors to play through. As a result I think we can squeeze in a central bunker which will create a landing slot to the left and the right. Players up to 230m will not be affected by this bunker but those that can reach it will need to either lay-up or choose a side. To complement the wide fairway I feel the green should also be wide with a central bunker. This will present a different dilemma to the golfers depending on where the pin is placed.

If the pin is on the right side I suspect the players will want to hit the narrow strip to the right. This will certainly be a demanding shot with both the bunker and the OB nearby. Pins on the left side will possibly be easier if attacked from the left. These types of decisions with the landing zone and the green shape adds so much more interest to the golfers at Darwin GC in that they're not just hitting it into the same part of fairway every time. Its far more thought provoking for the players and ultimately a better golf hole.

I urge you to study the placement of bunkers and green angles on every hole I have sketched as they all provide a definite theme of risk and reward design. Imagine a pin placed on a certain part of the green and try to determine where I want you to hit it to on the fairway to be rewarded.

I honestly think there is little of this strategy evident on the current golf course and these adjustments will make it a much "stronger" golf course. It also needs to be strongly emphasized that "stronger" does not mean more difficult. There will always be a safe line to the pin and it's up to the golfer to decide how daring they want to be in order to shave shots off their score.

This is the essence of how we get the low markers and the high markers around the same golf course and still provided interest and challenge to all of them.

14th hole – Par 5

The 15th seems a genuine three shotter. Much more thought needs to be administered towards the lay-up shot as I doubt many players can reach this green in two.

The first point of note is the large concrete path and culvert off the tee to the left. Please refer to my comments on the 2nd hole about trying to camouflage these artificial features as much as possible. I'm not sure much can be done to this culvert however by angling it further to the left might take it a little out of the sight line.

There are some large Mahoganies along the fence line and in the left side that should be removed but definitely consider replacing them to hide some of the fencing. We need a species that will hide the fence a little but not encroach too far into the fairway.

I have added a bunker on the left side down there at 250-260m. To be honest I am undecided about this suggestion as I would like to entice a few of the longer hitters to have a go at the green and maybe this bunker will cause them to lay-up. We'll look at this more during our ongoing discussion.

I have added a central bunker again at the lay-up zone and in sync with the rest of the designs this will need to be considered when looking at the daily pin position. The green needs much more pin

positions available and should probably remain on a slight right to left angle. Again, a higher platform at the rear of the green will provide much variety in the pin positions.

15th hole – Par 4

This Par 4 is an interesting hole. I think by taking some trees out and widening the landing area we can create a few more shot options off the tee. I think a bunker on the left at 250m will test the longer hitters and the tendency might be to bail out to the right side.

I do like the fact the bunker shot of the green confuses the depth perception and this should be kept, but remodeled. The green should also retain a fairly wide appearance and again the location of the pin position will determine the best angle of attack from the fairway.

16th hole – Par 3

This Par 3 suffers a similar issue with the tees on the 11th in that they do not point to the target. The small tree on the left does create an obstacle off the rear tees so the adjustment of these teeing angles and the tree needs to be done carefully.

To create a green different from the rest we actually have the opportunity to make something quite unusual here. There is an unusual, rare type of green called a “Biarritz” green. This type of green is best used on longer Par 3’s where longer running shots are favoured. It has a flat front and rear platform but separated by a deep trench running through the middle. There are no pin positions in this low trench section. I have seen a couple of these types of greens but I believe they are unsuccessful when the trench is too deep. Some of the famous ones are over 5 feet deep.

I think a variation of this type of green would work well however keep the trench depth to only about half a metre. I will try to get some photos and information on them before my next visit to the site.

The trees at the rear of this green are important for protection from the driving range however I would like to see some of the area opened up towards the 17th tees.

17th hole – Par 4

The 16th, 17th and 18th holes will definitely be a strong finish to the round here at Darwin, particularly with the changes suggested for the 18th.

The 17th is a strong Par 4 that has the ability to be even stronger with a tiger tee added about 20m back. This should only be used during the major events at the club as it will really be too much of a slog from back there for most of the members. There also needs to be some work done to simplify the shapes of the Ladies tee and blend better with the other tees.

The strength of this long Par 4 is the length and the deep grassy gully that runs through the front of the green. I would simply re-structure the green to create a few different shot angles in and maybe expose a very tricky pin position on the far right side of the green.

I have added a fairway trap down there at 250-260m however it was really used to break up the monotony of the bland fairway. I have some concerns if this bunker will make the golf hole too difficult.

18th hole – Par 5

The suggestions indicated here could really provide a much better and exciting finishing hole.

Remove some of the trees in between the 17th and 18th fairways as per the application between the 1st and 2nd holes. This will really create a wider landing zone for both holes however if the wrong side is chosen the hole will become much harder.

The added width will allow a central bunker (or mound) to be built that will provide options for the tee shot.

Down at the green a large generally unkempt area to the right of the green could be converted to a large water body. This will not only add much excitement to the finish of the golf hole but also tidy up that entire area. As a sideline it will also generate a lot of material for us to use for other features on the golf course. We need to structure the design works so we can work out where this dirt could be used and combine the construction of these works areas at the same time.

The pond will sit in a natural low point, which can only assist drainage in the area and works well with the runout point for water to the right of the 17th tees. With the pond encroaching back about 100m on the right it will play a part in the strategy of not only those attacking the green in two but also the lay-up shots.

The green can be wide and lowest on the right side near the water. This little right side pin will be treacherous with the water nearby. The level can climb up to a higher platform on the left side which will probably mean the players need to lay up near the start of the pond on the right side. The location of the pin will also determine which side of the fairway the longer players attack from off the tee.

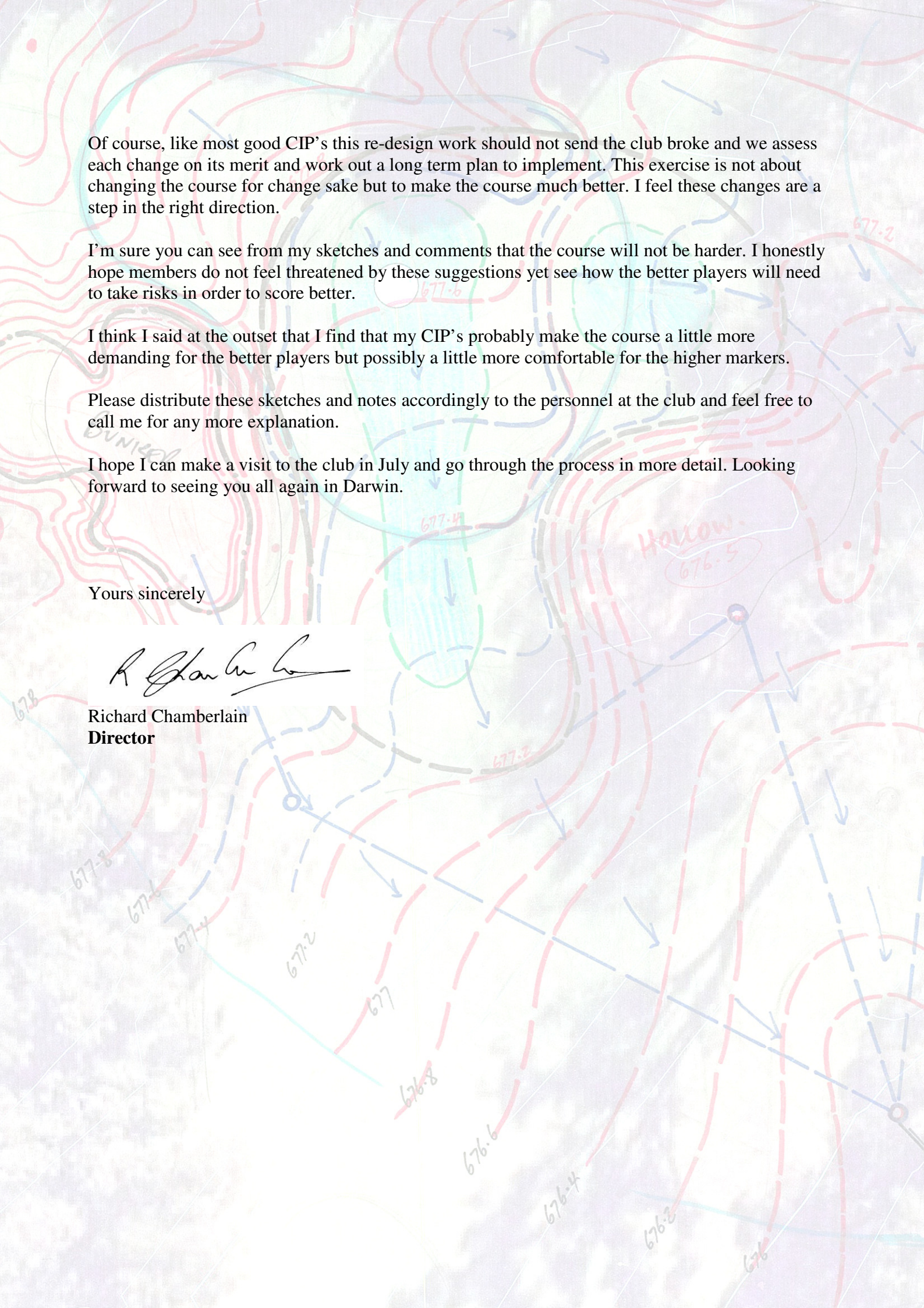
The addition of the water will certainly spice up the golf hole, clear up an untidy area, generate material for other works and improve the aesthetics from the clubhouse.

Conclusion

I trust you find these preliminary design suggestions to your liking. There is obviously much to discuss in formulating these ideas and deciding what does on the final plan. These initial notes are fairly brief and there as probably some minor items that have been omitted.

I would definitely like to come back to Darwin to check these ideas on the plan and go through a thorough explanation process of the reasons behind these suggestions.

Some of the design suggestions to the plan might be a little more change than first anticipated but I feel they will significantly increase the architectural merit of the golf course.

A topographic map of a golf course with various redesign sketches. The map features contour lines in red and blue, with elevation markers such as 677.8, 677.6, 677.4, 677.2, 677.0, 676.8, 676.6, 676.4, 676.2, and 676.0. Hand-drawn elements include a central green area with blue arrows pointing outwards, a blue dashed line path, and a red dashed line path. A blue circle with a red dot is located on the right side. The word 'Hollow' is written in red near the 676.5 contour. The word 'GUNNICK' is written in blue on the left side.

Of course, like most good CIP's this re-design work should not send the club broke and we assess each change on its merit and work out a long term plan to implement. This exercise is not about changing the course for change sake but to make the course much better. I feel these changes are a step in the right direction.

I'm sure you can see from my sketches and comments that the course will not be harder. I honestly hope members do not feel threatened by these suggestions yet see how the better players will need to take risks in order to score better.

I think I said at the outset that I find that my CIP's probably make the course a little more demanding for the better players but possibly a little more comfortable for the higher markers.

Please distribute these sketches and notes accordingly to the personnel at the club and feel free to call me for any more explanation.

I hope I can make a visit to the club in July and go through the process in more detail. Looking forward to seeing you all again in Darwin.

Yours sincerely

A handwritten signature in black ink, appearing to read 'Richard Chamberlain'.

Richard Chamberlain
Director



Figure 1: Design Sketch - Holes 1, 2, 9



Figure 2: Design Sketch - Holes 3, 8, 15



Figure 3: Design Sketch - Holes 4, 7



Figure 4: Design Sketch - Holes 5, 6



Figure 5: Design Sketch - Holes 10, 17, 18

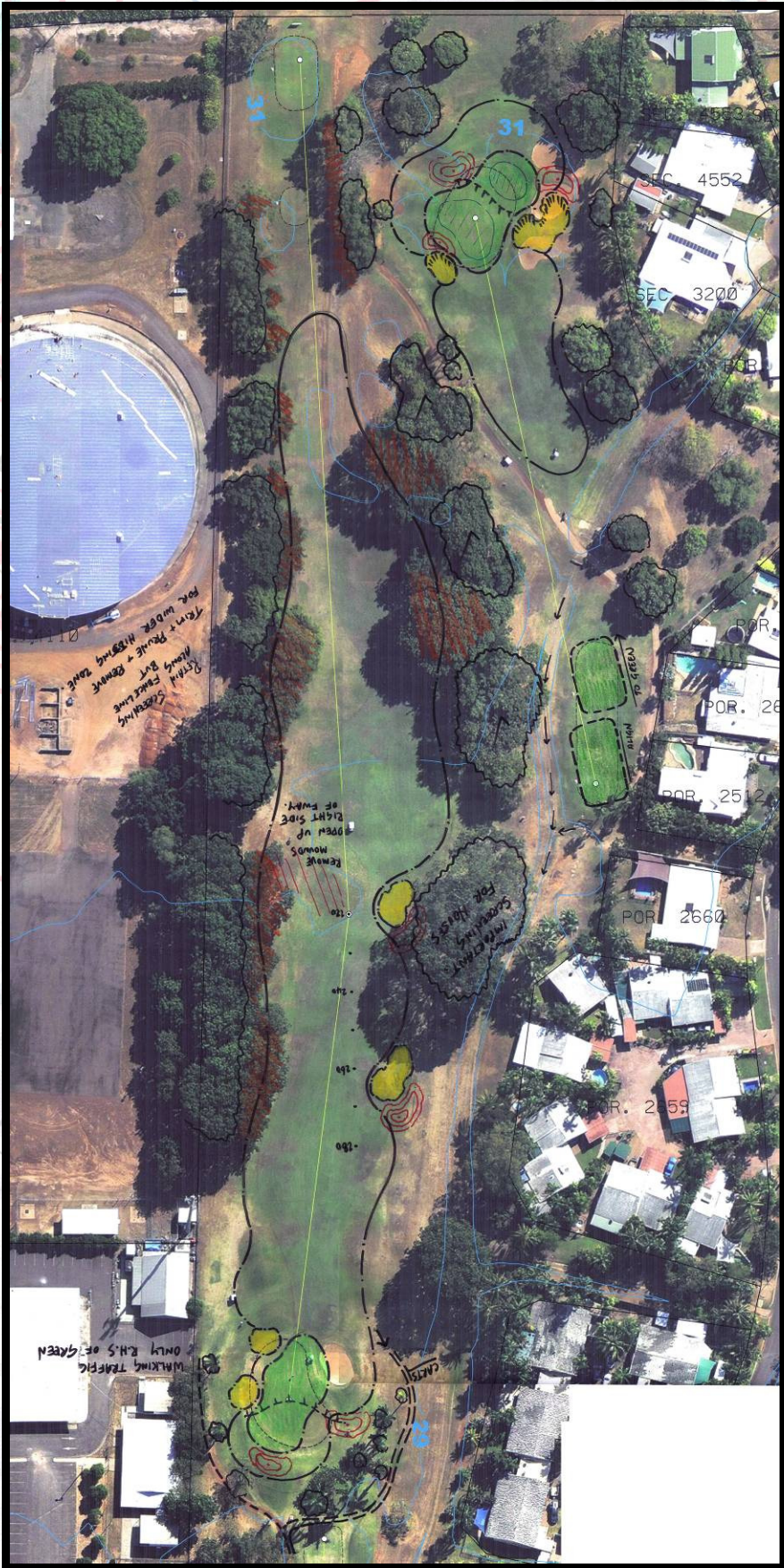


Figure 6: Design Sketch - Holes 11, 12

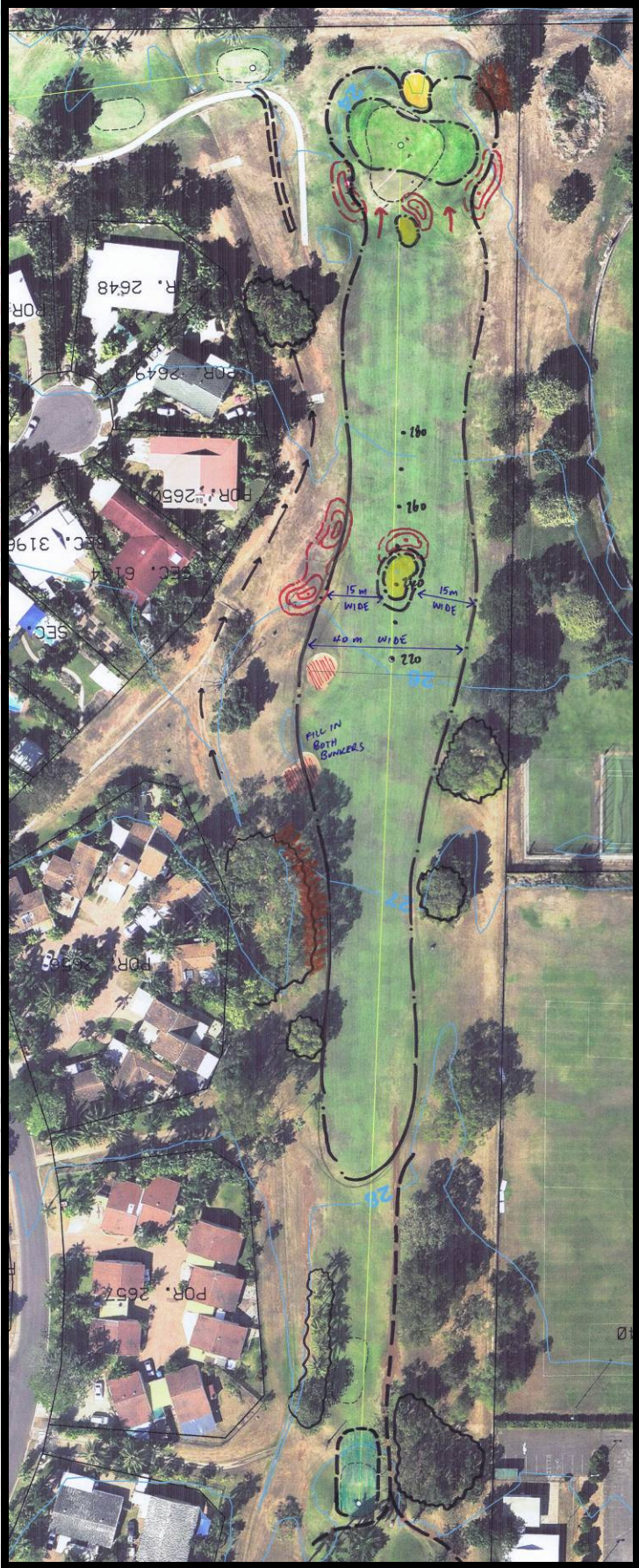


Figure 7: Design Sketch - Hole 13



Figure 8: Design Sketch - Hole 14



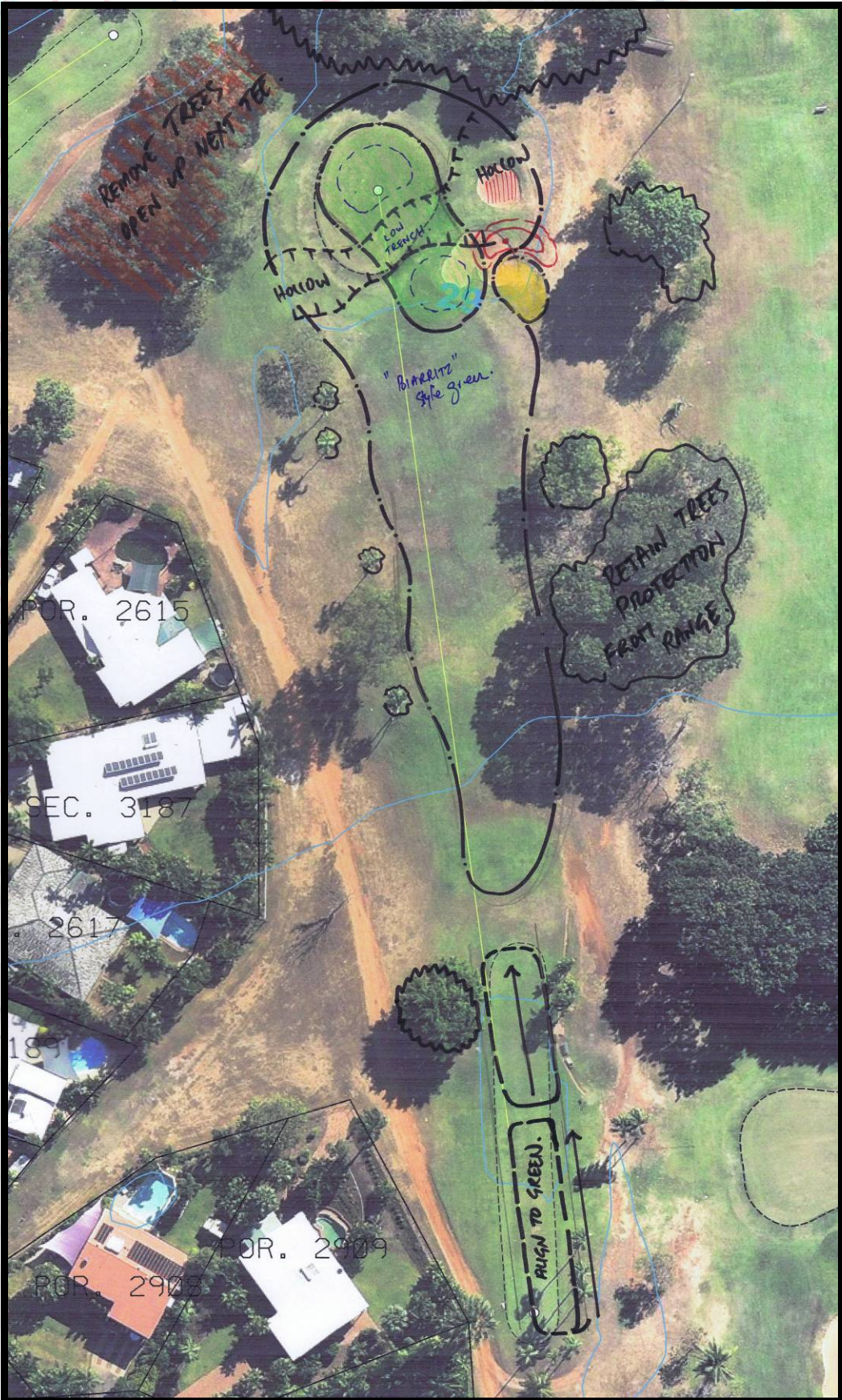


Figure 9: Design Sketch - Hole 16