

# UPPER FLOODSWALLET CAVE CONSERVATION PLAN

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## **UPPER FLOOD SWALLET**

### **BRIEF HISTORY**

Upper Flood Swallet was opened by the floods of 1968. A group of MCG members explored what is now the entrance and first section of Upper Flood Passage including the phreatic passage which leads to the chert bridge.

Very quickly a dig was established in Upper Flood Passage yet it was slow going as the passage was filled with Calcite. A lot of spoil was built up around the entrance which is why it is now a man made shaft. Also the first section of Upper Flood Passage was enlarged to make the digging easier and the spoil was used to create the steps in the entrance passage.

From here progress was quite slow with trips laying bang then clearing spoil, the next breakthrough came in June 1972 opening the first well decorated chamber. Another breakthrough came in August of the same year this led to more calcite filled passage which was passed in November of 1972. Still in Upper Flood Passage, after 13 years of digging and 17 years after the cave was first opened by the floods a breakthrough was made.

On 13th April 1985 the breakthrough was made in the small low chamber just prior to Midnight Chamber and access was made to the streamway. From Midnight Chamber the cave was open up stream almost to the point that it is at today and down stream was open as far as where the stream disappears by the By Pass Passage.

As the stream disappears down a small tight hole, it was decided to dig in the higher level chamber which was filled with mud at its far end, with the hope of re-joining the stream deeper in the cave. In August 1986 after 40 to 50ft of passage had been dug out a breakthrough was made into the top of a high passage. Progress was halted after a short distance at the Lavatory Trap.

From here the rest of the cave was opened up and explored within a year. The first breakthrough came in July 1987, as the stream was found at the T junction just passed the Lavatory Trap. From here part of the Canal and most of Black Shale Rift was explored. The following month saw a blockage in the Canal being passed, so Puddle Lake was met along with the main stream and the Red Room and the Boulder Choke were explored.

In Oct 1989 the most recent discovery was made with the breakthrough in to Black Aven in Black Shale Rift.

Currently most digging efforts are concentrating on the boulder choke in the Red Room, there are a few different areas within the boulder choke that are being dug with a view to passing the blockage and joining the stream again which has been spore tested to the rising at Cheddar 3 miles away and 600 ft lower.

As a conservation measure and to make access to the digs in the Red Room a second entrance is currently being dug, which will connect with Rip Off III at the end of Black Shale Rift. This will be beneficial both as a conservation aid, as the main decorated sections of the cave will be avoided by diggers and access will be made quicker and easier for the diggers. The majority of visits to Upper Flood Swallet are digging trips so this will dramatically reduce the number of people passing through areas such as Midnight Passage which are very delicate and will therefore reduce the risk to the formations in these areas. Also the digging parties will benefit as they will spend less time travelling through the cave and will therefore have more time at the dig face.

The shaft for Upper Flood II can be located on the left hand side of the track leading from the car park towards Nordrach (Grid Reference ?). The shaft is currently 18 ft deep at the time of writing and is lined with concrete pipe with a locked gate. Work is continuing from both inside the cave and outside to connect the shaft with Rip Off III but the going is slow as the rock in this area is particularly tough. Radio location has been conducted various times during the dig and the most recent attempt shows that we are only 2 to 3 ft away from a breakthrough into Rip Off III.



Midnight Passage - Upper Flood Swallet

## UPPER FLOOD SWALLET

### CAVE DESCRIPTION

In order to produce an accurate description of Upper Flood,, it was decided to divide the cave into five sections:

- 1 - The Entrance Series & Upper Flood Passage.
- 2- Midnight Passage.
- 3 - By Pass Passage.
- 4 - Black Shale Rift.
- 5- The Canal & The Red Room.

1) Once through the locked entrance, a 6 to 8 ft drop down a concrete pipe leads to a small chamber to your right. There is a small climb down before getting to a series of steps - created with debris from the original dig - which take you to a T junction.

This passage at the T junction is Upper Flood Passage ; going left, you pass over a few boulders and come across stal flow stone which has to be passed flat out on your stomach before opening out in a small chamber (Boulder Chamber).

To your right in this chamber, a phreatic style chert passage leads - via two right angle turns - to Chert Bridge, a little chamber with fine stalactites hanging off the ceiling. A small sump pool can be found on the right hand side of the chamber and the water from this sump re-emerges at The Dam in Upper Flood Passage. Continuing along the Chert Bridge passage, progress is halted by stal blockage.

Back in Boulder Chamber, lead stained stal flow formations can be seen, at the far end of this chamber a very loose boulder ruckle ends progression. This is one end of Upper Flood Passage and thought to be the original entrance.

Back at the T junction, approaching from the entrance, the right hand turning is initially a walking size passage which was artificially enlarged after its discovery in order to make digging easier. This passage soon lowers to a hands and knees crawl which enlarges again just before getting to the dam. At this point, a horizontal tape hangs across the passage in order to protect the formations hanging from the ceiling when entering the chamber. We then get to the first beautifully decorated chamber of the cave. This is finely decorated with stal flow, stalctites/stalacmites, gour pools mud and silt formations.

The exit of the chamber is a squeeze which leads to a hands and knees crawl for 10 to 15 ft. After a sharp left hand turn, a passage leads off to the left at waist height

which has been partially filled with spoil from the original dig. A short climb up leads to some small curtains and formations. No way on can be found and the passage closes off after 15 ft.

Back in Upper Flood Passage, progress is made mainly by hands and knees crawling until a small chamber is reached which has been partially filled with spoil from the various original dig sites. After this little chamber, the passage carries on where once again hands and knees crawling is required until reaching another chamber where the passage widens and rises slightly. This passage breaks into a larger chamber which contains some untouched mud crack formations. From this point, progression through the passage is mainly flat out on your stomach with a few areas of hands and knees crawling. You then approach The Duck which is a tight squeeze through a puddle before reaching a slightly wider passage.

This passage breaks into a low wide chamber which was the original breakthrough point in April 1985. This chamber is finely decorated with stal straws, flow stone, silt and mud formations. Although much of it was broken to gain access to the rest of the cave, the remaining formations are still numerous. Coming out of this chamber, great care should be taken as you squeeze through between a large stal on your right hand side and the calcited floor to get to the splendid Midnight Chamber.

2) Once in Midnight Chamber, caution is needed as you go down the calcite slope towards the streamway ensuring that you don't cross the taped path on the way. Heading upstream from Midnight Chamber, the passage gets very restricted before choking. This is an area that has been sporadically dug over the years due to water ~levels not permitting much work to be done.

Back in Midnight Chamber much care and attention is needed to avoid touching any of the numerous formations. It is also a good idea to clean your clothing in the stream before further progress is made as on your way out you can get the formations muddy. In this next section of the beautifully decorated stream passage - Midnight Passage - extreme care is again needed in order that none of the overhead and side formations are damaged. This can only be achieved by progressing flat out over the boulders coming from Midnight Chamber and into Midnight Passage.

This first section of Midnight Passage is decorated with fine false floor shelves containing various formations as well as delicate straw stalactite formations overhead. A small boulder pile is encountered with another horizontally hanging tape to again promote the need of staying very low and avoiding contact with the formations above.

Here, the widening streamway is followed with the formations still abundant all along the passage. You then encounter a right hand bend where many fine straw formations can be seen on the right hand corner. As you continue along the streamway, Chocolate Muffin inlet, which is also a dig, is passed on your left. The roof lowers to a crawl, at this point, then the passage height starts to rise as you enter a large, wide bedding plane chamber this has tape running down both sides in order to protect the

formations. Even though it is possible to stand in this chamber, much care and attention is needed due to the straw stalactites hanging from the ceiling.

On leaving the chamber, the stream is followed through a squeeze and into a boulder choke before getting to a short crawl in the stream for approximately 10 to 15 ft. This breaks out, after a left hand bend, into High Passage where again care is needed at the point of entry because of the overhead formations. These could be damaged by standing up immediately after the crawl. After this point it is possible to stand up and walk for 50 to 60 ft following the streamway. The stream then disappears after a steep climb down through a tight squeeze. Unfortunately, the streamway cannot be followed any further as the passage closes down after only a few feet but the water from the stream re-emerges in Puddle Lake which is part of The Canal.

3) By going right instead of following the streamway, a large chamber at a higher level can be accessed by using a conveniently placed boulder situated in the stream. Plenty of fine formations can be found. This part of the cave is By-Pass Passage, the way out of the chamber is through a crawl/squeeze which was originally dug open. After 15 to 20 ft, you arrive at the top of a climb complete with fixed rope to help you get to the traverse. It is important to traverse all the way to Jammed Rock Bridge, where foot holds and hand holds can be used to lower yourself down, as many formations are situated just below the end of the fixed rope. Jammed Rock Bridge has been taped off as it is very loose and unstable, and should therefore not be touched. If you go back to the end of the fixed rope and turn around you find Hannah's Grotto, a beautifully decorated small grotto in an alcove.

Heading down the high passage and under Jammed Rock bridge, plenty of fine formations can be found along the ceiling. After a short distance, a darn is passed - which was used to hold the water when digging further down the passage - and you arrive at The Lavatory Trap. Please note that The Lavatory Trap has recently been cleared out. What used to be a duck or even sump at times is now ~an easy low crawl. After a small climb down into The Lavatory Trap you go through the crawl and rise out on the other side, on an equally short climb up. Here, a small aven in the ceiling can be seen which is coated with red and white moon milk formations. From here, the passage drops down again following a section of piping originally used for bailing The Lavatory Trap. The dimensions of this section are quite small. At the bottom of the short drop, a T-junction is reached along with a stream.

4) At the junction, turning right (up stream) leads to Black Shale Rift. After having gone through a flat out squeeze over a false floor, the tight passage carries on for approximately 50 to 60ft before enlarging gradually to walking height. The walls here are coated with some fine moonmilk formations. From this small chamber, the passageway forms a rift which is 10 to 12ft high. After a short distance a high bank of black coloured flow stone is encountered. This is the bottom of Black Aven, which has a small trickle of water flowing over the black flowstone appearance shale.

Black Aven can be climbed 10 to 12ft to a small opening where it is possible to either climb a further 10 to 12ft to some fine yet very soft and fragile gour pools. Here,

there is a light connection to the small bedding chamber at the bottom of Rip off Aven. Turning right at the top of the first climb up Black Aven, it is possible to follow a short finely decorated and unspoilt passageway that leads to a climb down to the stream at the start of the rift. This passage is beautifully decorated and in perfect condition it is therefore not recommended and pointless to enter it as it only leads back to the stream again. Leave it as unspoilt as it is by not using it, especially as all the formations can be seen at the top of the first climb anyway!!

Back in the stream from the bottom of Black Aven, the rift continues a short way, past some fallen boulders that have to be squeezed over and emerges in a bedding chamber with decorations hanging from a fault in the ceiling and along both sides. From here, by following the stream up through the mud the top of the chamber is reached. On your right hand side is the light connection to the top of Black Aven. Turning left and following the passage, the bottom end of another bedding chamber is reached after having made your way up through the thick mud. Here again, decorations on both sides of the chamber can be seen and progress in this chamber should be made through the centre following the stream in glutinous mud. From this point a 5 to 6ft flat out crawl on the left hand side brings you out at the bottom of Rip of Aven.

After a 10 to 12 ft climb up a chimney, the passage opens out slightly. Carrying on climbing for another 10 to 12 ft along the left hand wall, the top of the climb is reached and the start of a tight flat out crawl begins. Behind you is a small grotto with a few formations - so be careful where you put your feet. The flat out crawl continues for 10 to 15ft. This is the site of the proposed second entrance to Upper Flood Swallet. There are a few tools here which are currently being used as an aid to digging whilst trying to make the connection to the new entrance.

The new entrance can be found left of the track leading from the car park towards Nordrach and is currently 18ft deep at the time of writing.

5- Turning left at the T-junction, following down stream after having gone through The Lavatory Trap, the passage starts with a flat out crawl which quickly becomes hands and knees crawling. This is The Canal which is so named as it is very wet and even a swim through the passage at times. You quickly arrive in a small chamber which contains a large pool Puddle Lake. Here, the main stream joins again, from Midnight Passage. It can be followed up stream a short way to a sump. Back in Puddle Lake a lot of formations can be found along the walls in the small chamber so care is needed. As you continue down stream, the passage quickly opens into The Red Room. You can instantly see where it gets its name from, due to the red stained stal flow along one wall.

From the Red Room, various passages lead off, most of which interconnect as this is a large boulder choke. This chamber has housed and still houses various dig sites over the years. The stream disappears through boulders at the entrance to the Red Room although it can be seen again, as it goes down a very small and tight hole which cannot be followed. Also, in the boulder choke is Andrews' Grotto which houses a few formations.

## UPPER FLOOD SWALLET

### CURRENT CONSERVATION MEASURES

Since the discovery of Upper Flood Swallet a lot of conservation measures have been implemented.

There is currently quite a large amount of taping in the cave protecting some of the most delicate areas by both creating a line that must not be crossed and by bringing an awareness of the formations be it calcite, mud or silt. This has proved to be very effective, as in comparison with other sites, Upper Flood swallet has suffered very little damage. It will be our intention to maintain the sites already taped and to add new areas of taping, as listed on page ? to further protect the cave.

The cleaning of formations is inevitably needed in a cave such as Upper Flood Swallet. The main causes of dirtied stal in Upper Flood are as follows.

1) During the heavy floods of 1968 which opened the cave, many flies were brought into the cave with the stream, they then got caught on the damp stalactites/stalagmites etc and died. Some of the dead flies have since been covered with a layer of calcite. Therefore it would not be sensible to remove them, especially as they are part of the caves natural history.

2) Banging has also caused some dirtying of the stal. The fumes from the explosion settle on the stal leaving a black film. This occurs mainly in Upper Flood Passage where it was necessary to use bang to break through the calcite filled passage to discover Midnight Chamber. It will be our intention to clean most areas of residue from the bang fumes, which are listed on page ? even though certain areas will be left in their original state.

3) The passage of cavers inevitably causes areas of dirtied stal, especially in areas where space is restricted for movement or after a particularly muddy section such as the Lavatory Trap. All areas that have been dirtied by caving activity will be cleaned to their original state and monitored.

The most effective way of 'stal cleaning' is with a water spray such as MCG's 5 lt. Hozelock pump action spray. This is most effective as there is no physical contact to the stal and different pressures can be applied depending on how delicate the area being cleaned is. In Upper Flood there is no problem in obtaining water, even in Upper Flood Passage water can be collected from various points.

The water spray has already been used with great effect in the first decorated chamber in Upper Flood Passage. Also a lot of cleaning has been done on the various numerous formations around the Lavatory Trap. The plan is to systematically clean the entire cave from entrance to end.



The clearing of foreign objects has almost been completed as there was little rubbish found in the cave. The main items that have been removed are a ladder which was hidden in a slot in the roof of the second chamber in Upper Flood Passage. Also a lot of wood has been removed from the end of Upper Flood Passage. Other than this plastic sacks which held ballast from the dig sites have been removed and one or two other items that have been washed in with the stream.

There are certain foreign objects that have to be left in the cave such as digging implements, items used for the bailing of water and for cleaning before progress is made through decorated areas.

In order to monitor current and future conservation measures a fixed point photographic survey will be set up to monitor how delicate areas of the cave are affected. See page ? for a full explanation of fixed point photography.

Another method of conservation that is in place is the access arrangement as described in 'Usage of the Cave' All visits to the cave have to be accompanied with a nominated leader of which there are 16 that are active and 5 that have access to a key for historical reasons. Upper Flood Swallet leadership is only obtained by going on a 'training trip' with Malcolm Cotter who has spent much time working within the cave on both digging and conservation projects since the caves discovery in 1968. The training trip points out all conservation needs of the cave and explains the history, prior to this trip you are expected to have experience of Upper Flood Swallet.

Conservation is currently monitored by using a log book which has to be filled in by the leader after each trip into the cave, explaining the reason for the trip the route taken and any other information that has been noted on the trip.

## UPPER FLOOD SWALLET

### USAGE OF THE CAVE

As you can see in the table below the bulk of trips into Upper Flood Swallet are either guest trips or digging trips.

We can assume that most digging trips will be to the Red Room and that most guest trips will cover the entire cave. We can also assume that most conservation and photo trips will be to areas such as Midnight Passage and the decorated chambers in Upper Flood Passage.

From this we can see which parts of the cave are used most often and therefore which areas are most at risk, as delicate areas like Midnight Passage will be passed on the majority of trips listed below, even though when Upper Flood II is opened the amount of traffic in Midnight Passage will be dramatically reduced.

Trips since 1990:

Year	Total	Guest	Digging	Conservation	Photo
Trips	Trips	Trips	Trips	Trips	Trips
1990	28	4	4	2	6
1991	28	6	1	0	1
1992	21	4	8	1	0
1993	17	2	8	0	2
1994	20	5	5	2	2
1995	37	11	14	7	2
1996	27	7	10	2	3
1997	45	16	26	3	1
1998*	17	5	1	11	0
Total	240	55	77	28	17

(\*The total for 1998 is taken as January to June)

A leader system is in operation in Upper Flood Swallet. There are 16 current leaders for the cave and 5 who have access to the key for historic reasons. Each leader is trained for the conservation needs of Upper Flood Swallet and is experienced with every aspect of the cave and its environment.

There are certain rules of access that the leaders ensure are these are met as follows.

Party size is limited to 4 including the leader. If more than 4 are required, in digging for example, travel through the cave should be in a party not exceeding 4 including the leader.

The key to the cave is not to be passed to anyone who is not an agreed leader.

No carbide is to be used in the cave.

Novices cavers are not allowed entry.

Wets suits are to be worn beyond the first duck.

The Blackmoor Log, which hangs on the back of the tackle store door, is to be filled in for every trip.



Midnight Passage - Upper Flood Swallet

## **UPPER FLOOD SWALLET**

### **ASSESSMENT OF SCIENTIFIC IMPORTANCE / INTEREST**

Tim statutory protection, other non-statutory designation, reference to previous documented studies : journal!?!??

- description of sediments (see Journal)
- book by Stanton on lead mining.

## **UPPER FLOOD SWALLET**

### **FUTURE CONSERVATION MEASURES**

Upper Flood Swallet currently has a lot of conservation measures in place, such as taping protecting delicate areas, certain areas have been extensively cleaned, which is an on going project. Also the access procedure is a conservation measure by not allowing novices etc. into the cave, and by insisting all groups are with leaders, who are aware of the conservation needs within the cave. There are currently 16 active leaders for Upper Flood Swallet a lot of whom live locally ensuring that guest groups can gain access at any time.

Another on going project is the proposed second entrance which will be of great benefit to the conservation of the cave as the main delicate areas of the cave will receive much reduced traffic.

So in the future all areas of taping within the cave will be maintained and on top of this new areas of taping will added to ensure that all areas that need protecting are protected. All proposed new areas of taping are listed on page?.

Cleaning is another major part of the conservation of Upper Flood Swallet. The systematic cleaning of the cave will continue. The main sites that need attention are listed on page?

Finally the fixed point photographic survey will monitor the conservation measures that are in place and those that will be placed. At the same time the number of trips into the cave and the routes taken will also be monitored. This will enable us to continuously monitor the conservation techniques that are in place and gauge if any new measures are required.

A report on the current conservation measures and their effect will be written once every two years, this will coincide with the fixed point photographic survey so that all conservation measures can be reviewed and changes will be recorded and reported appropriately.

We aim to conduct the fixed point photographic survey on or around the half yearly weekend with an aim to get a report completed prior to the following AGM. The 16 current active leaders for Upper Flood Swallet will all be responsible for the management and monitoring of the conservation measures in this document along with the committee of the Mendip Caving Group.

## UPPER FLOOD SWALLET

### TAPING

The following sections outline areas that require taping in Upper Flood Swallet. The taping will be placed in order to create a visual line which must never be crossed - apart for cleaning purposes - to protect formations both calcite, mud & sediment.

As access to Upper Flood Swallet is controlled, this reduces the risk of damaging formations but even though, extra measures to promote conservation are still required.

Taping trips will therefore have to be planned and this will be given priority.

#### 1- The Entrance Series & Upper Flood Passage.

1a) Just past The Dam, in Upper Flood Passage, a tape is in place, hanging horizontally to protect the formations in the ceiling in the first chamber.

1b) In the first well decorated chamber, a tape is in place which runs down both sides of the passage to protect decorations and force cavers onto the pathway.

1c) The second chamber in Upper Flood Passage also requires taping to preserve what is left of the fine and untouched mud crack floor and to prevent cavers brushing past the stal covered wall. The tape is to be placed along both walls of the passage to create a pathway.

1d) The section in between The Duck and the breakthrough point, which is a wide low passage where crawling is necessary, needs to be taped to prevent further damage to the fine mud / shale formations on the wall and to also protect what remains of the straw and flow formations, which were damaged on the initial breakthrough.

#### 2- Midnight Chamber & Midnight Passage.

2a) The tape leading down to the stream in Midnight Chamber needs reviewing and re-securing.

2b) The two sections of tape hanging in Midnight Passage are in place to protect formations in the ceiling.

2c) In the bedding chamber, a tape is in place along both sides of the stream. This tape needs extending to the squeeze on the right hand side of the chamber to protect the mud / stal formations even further.

2d) Some taping is required on exiting the squeeze to protect straw formations in the roof as the temptation is to stand up on entering High Passage. These formations are at risk without taping.

2e) Taping the bottom of the climb into By-Pass Passage is also essential in order to bring awareness to the untouched mud formations.

### 3- By-Pass Passage.

3a) Taping around the formations in the chamber at the start of the passage is in place but there are a few delicate straws in the ceiling above the pathway that need protecting. The existing tape has protected the formations well. To protect the straws, we could possibly remove the spoil heap on the right hand side wall and divert the path.

3b) In Hannah's Grotto, it might be an idea to put a tape at the bottom of the slope where the rope is hanging and also at the entrance of the grotto to stop anyone from entering it.

3c) Hannah's Grotto to Lavatory Trap. A tape is needed to protect the nice mud crack formations on both sides of the passage looking away from Hannah's Grotto . The hanging boulder in the passage has been taped off as it is unstable. Fine mud crack and stal formations above the entrance to The Lavatory Trap have been taped off. Once through The Lavatory Trap and on the other side of the squeeze before getting to the junction, a nice aven in the roof with red stained stal flow stone needs to be taped.

### 4- Black Shale Rift.

4a) As the crawl in the stream enlarges, moonmilk, straws and false floor can be seen on the right hand side. Tape has been put in place all along the right hand side to direct people into the stream and avoid the temptation to travel over & close to decorations.

4b) Once in the rift, in between Black Aven and the bedding chamber there is a shark tooth curtain hanging precariously in the main passage, a very delicate location which needs protecting by taping.

4c) At the top of the first small chamber, a gour pool is found in the centre of the route which can be avoided and would be hard to tape off. In the wall behind the gour pool, some fine lead/shale formations are already being protected by an overhanging cave wall.

4d) To the right, a passage leads off which is the connection to Black Aven, this passage should be taped off as plenty of stal formations can be seen. Along the walls of both the bedding chamber and the mud and gour pool, tape should be used in order to make a route up to Rip off Aven.

## 5- Canal & Red Room.

5a) Passing through the Canal, you emerge into Puddle Lake which has stal formations along the wall and ceiling which continue all the way to The Red Room. The main red stal is taped off and well protected.

5b) Andrews' Grotto - by the boulder choke - is also taped off although some of the formations have already been damaged.



## UPPER FLOOD SWALLET

### CLEANING

This next section outlines areas of decoration that requires cleaning as they have been muddied from caving activity, flood debris or blasting. Only the main areas of the cave have been outlined.

The MCG currently owns a water spray which is the best way of cleaning calcite as brushing or scrubbing is more damaging. Some areas of calcite are naturally stained which gives it a dirty look.

It will be promoted that on most trips into the cave, a section will receive attention. This combined with regular 'cleaning trips' should ensure that the cave is kept clean. It is also important that some areas are left in their original state to enable a comparison to be drawn. This, combined with the fixed point photographic survey will allow us to evaluate which areas are most affected.

#### 1- The Entrance Series & Upper Flood Passage.

1a) As Upper Flood Passage is joined from the entrance, cleaning is required on the shelf on the downstream side of the entrance, stal flow and remains of broken straw formations, mainly muddied by passing cavers.

1b) Up stream, at the end of Upper Flood Passage, through the angled crawl at the sump pool / chert bridge, a fine stalactite hanging into the centre of small chamber requires cleaning, as it is slightly muddied.

1c) Downstream in Upper Flood Passage, the first chamber past The Dam needs cleaning at various points, mainly on muddied flow stone. As the passage breaks out into a larger finely decorated chamber, much cleaning has already been done, yet, there are areas that still require cleaning.

1d) 12 to 24 ft past the first chamber, the passage is entered at waist height which is largely backfilled with spoil. At this junction, much cleaning is required on the ceiling and around the T shaped passage. Some curtains in the back filled passage also need cleaning as they have been heavily soiled by passing cavers.

1e) In the second decorated chamber in Upper Flood Passage, some cleaning is needed on the wall and in the ceiling which is mainly formed of stal flow stone. Some formations can also be found here and need cleaning too.

1f) Once past The Duck, a small chamber containing many fine formations - just prior to the squeeze into Midnight Chamber - is also composed of straw stalactites formations where much cleaning is required ; many formations were damaged during the initial breakthrough.

## 2- Midnight Chamber & Midnight Passage.

2a) The back wall along the stream in Midnight Chamber also muddied by passing cavers and requires cleaning.

2b) Midnight Passage as well as the bedding plane chamber are finely decorated passages where most formations are in good condition. Yet, some lower areas along these two parts of the cave have been muddied from caving activity.

## 3- By Pass Passage.

3a) Decorations in the chamber at the start of By Pass Passage requires cleaning.

3b) The stal in the entrance of Hannah's Grotto also need cleaning.

3c) Decorations surrounding The Lavatory Trap have received a lot of attention already but some work still needs doing.

## 4- Black Shale Rift.

4a) The first chamber in Black Shale Rift contains some moon milk formations - some of which have already been cleaned - but some are still muddy and require cleaning.

4b) Some stalactites hanging from faults in the ceiling and around the perimeter of the Bedding Chamber at the end of Black Shale Rift need cleaning.

4c) At the top of Rip off Aven, a small grotto requires cleaning.

## 5- Canal & The Red Room

5a) AJ1 the formations in Puddle Lake require cleaning.

5b) The formations in The Red Room could also do with some cleaning.

5c) Andrew's Grotto is also very muddy and does require a lot of attention, even though most of the formations here have already been damaged.

## UPPER FLOOD SWALLET

### FIXED POINT PHOTOGRAPHIC SURVEY

Fixed point photography is a method of monitoring the conservation of the cave. Certain points of the cave will be chosen and recorded so that it will be possible to take an identical photograph at intervals over a set period. By building a library of identical photographs, it will be possible to monitor changes in the cave environment and therefore assess the cave conservation measures that are in place.

A cross reference of sites will be chosen from delicate areas such as Midnight Chamber to less at risk areas such as Black Aven. The sites will be chosen to monitor potential wear and tear from caving activity, potential damage from natural causes such as flooding or surface activity and also areas that have little risk from caving activity or natural damage.

With fixed point photography it is obviously important to make the fixed point fixed. There are various ways of achieving this such as marking the spot with a bolt etc., or by taking a bearing of the camera, but I believe it is unnecessary to both go against the idea of conservation by marking the cave and by making it a time consuming event. So I would suggest that during the first survey a photograph is taken of the position of the camera and flashes so that in future surveys they can be laminated and taken into the cave for quick reference. This combined with notes taken on the initial survey should make all future surveys as accurate as they need to be. It is also important that camera readings such as aperture etc. are recorded for future trips. This will enable the photographer to get the exact same condition for each photographic survey taken. One extra measure is that the same camera, flash guns, tripod, developer make and speed of film will be used each time. I believe it would be most beneficial to use colour prints at 200 ASA.

Finally the duration of the fixed point survey has to be agreed, I would suggest a fixed date every other year, such as the half yearly weekend for a period of eight years then the plan can be reviewed. After each survey a report will be completed showing the photographs and highlighting any changes found resulting in new ideas or methods of conservation.

Just for reference I have created a list of potential sites for the fixed point photography, obviously these will have to be reviewed on a trip into the cave to assess the suitability of the sites.

1) Sump pool and stalactite in small chamber with chert bridge. This would show any changes with the water level and damage to the stal.

2+3) The first chamber in Upper Flood Passage. This has been extensively cleaned and taped down both sides to protect mud formations. I would suggest a photo at the

downstream end of the passage as it lowers to a crawl and stal formations behind the tape on the LH side wall.

4) In the second chamber in Upper Flood Passage. There are fine mud and silt formations behind the tape on both sides. I would suggest a point on the right hand side towards the centre of the chamber, where there are fine mud crack formations.

5) Upper Flood Passage prior to the breakthrough point into Midnight Chamber, as this section has some nice formations yet space is confined so both silt and calcite formations are at risk

6,7,8) Midnight Chamber, there are endless potential locations for fixed point photography in Midnight Chamber. I would suggest the stal flow slope leading down to the stream from Upper Flood Passage, then one up stream and one down stream taken from the streamway from each end of the chamber.

9,10,11,12) Various points from Midnight Chamber to the bedding chamber before the squeeze in Midnight Passage e.g. looking down the stream in the initial section. The point where you pass over a boulder and underneath the stalactite which is a delicate point. The straws on the first right hand bend of the stream and also the decorations in the ceiling of the large bedding chamber just downstream of Chocolate Muffin Inlet.

13) Formations in the grotto on left hand side as squeeze in Midnight chamber is exited.

14) Delicate straw formations in the ceiling at the exit of the squeeze in Midnight Passage are at risk from people standing too quickly as they exit the squeeze.

15) Formations surrounding the Lavatory Trap which have recently been cleaned.

16) In the Lavatory Trap to show variations in water level and any movement of the mud.

17) The Moon Milk formations in Black Shale Rift after the squeeze are at risk from caving activity which have recently been taped.

18) At the top of Black Aven looking towards pristine stal formations in passage.

19) Through the centre of the bedding chamber prior to Rip Off Aven looking up stream, to gauge how the traffic from the proposed second entrance effects the environment.

20) Red stained stal flow in the Red Room.

21) Andrews Grotto in the Red Room, to gauge if the area is affected by the digging activity.

Note added 28/05/07: the following attachments are NOT included with this document:

## ATTACHMENTS

1. UPPER FLOOD SWALLET - CAVE SURVEY SHOWING CURRENT CONSERVATION MEASURES
2. UPPER FLOOD SWALLET - CAVE SURVEY SHOWING FUTURE CONSERVATION MEASURES AND FIXED POINT PHOTOGRAPHY LOCATIONS.